OMS

The Opcode MIDI System

OPCODE

SYSTEMS INC

Opcode MIDI System (OMS)

User Manual

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PART 1: Getting Started with OMS

CHAPTER 1: Overview

❑ Introduction to the Opcode MIDI System™ (OMS)

The Opcode MIDI System (OMS) is a Macintosh system extension that bridges the gap between MIDI applications and MIDI hardware. It has many functions and features:

- **OMS acts as a central MIDI driver**. OMS-compatible applications use OMS to communicate with all the MIDI hardware in your studio. These applications no longer require their own dedicated MIDI drivers and, therefore, work with a greater variety of hardware.
- **OMS provides a central location for defining and storing a detailed description of your MIDI studio**. With OMS, you enter information about all the devices in your MIDI studio once. OMS-compatible applications will then reference that setup. If you change your studio, simply inform OMS of the change and all OMS-compatible applications immediately reflect your new studio configuration.
- **OMS gives you access to hundreds of MIDI channels**. You can use OMS with either a standard Macintosh MIDI interface (such as Opcode's MIDI Translator or Studio 3) or with multi-port interfaces (such as Opcode's Studio 4 and Studio 5, Mark of the Unicorn's MIDI Time Piece I and II, or Lone Wolf's MIDITap). OMS is like a palette from which you pick the devices and MIDI channels that you'll need. Your MIDI interface determines the number of simultaneous MIDI channels, but OMS gives it access to every device and MIDI channel in your studio.
- **OMS can operate with or without MIDI Manager**. Apple's MIDI Manager requires a lot of computer processing power, and is often unusable on slower Macs. OMS provides many of the benefits of MIDI

Manager without the performance costs associated with it. Without MIDI Manager, OMS can perform all the functions listed above, plus it can drive Digidesign's MacProteus and SampleCell cards. OMS will work seamlessly with MIDI Manager, if you ever need its time-sharing or inter-application communication features.

Since OMS is a system extension, its services are available to applications every time you start your computer. It doesn't take up much memory or control the Macintosh serial ports until an OMS-compatible application asks for its services.

❑ System and Finder Version Requirements

OMS requires System 6.0.4 or higher; it will not install itself upon startup if an older System is running. System software is available from your Apple dealer, user groups, and electronic information services.

❑ How to Read this Manual

NOTE: Macintosh and MIDI experts may be able to start using OMS simply by reading Chapter 3: Quick Start Guide to OMS and by following the on-line help, referring to other sections of this manual for reference.

This manual assumes that you are familiar with basic Macintosh operations. If you're not, please read the Macintosh manual. In particular, you should be comfortable with clicking, double-clicking, dragging, choosing, selecting, scrolling, windows and pop-up menus.

Also, you should have a basic understanding of MIDI. If you don't, you may wish to purchase Opcode's Book of MIDI™ Hypercard stack or read one of the many basic MIDI reference books available.

This manual accurately describes OMS operations at the time of its printing. However, updates and changes may occur. Always look for change information in the Read Me folder on your master program disk.

This manual is divided into three parts:

- **Getting Started with OMS**—This part includes this introductory chapter, a chapter on software installation and definitions, and a quick start guide to OMS for "expert" MIDI users.
- **OMS Tutorial**—This part is a step-by-step tutorial. Follow through it to create a software representation of your studio's MIDI devices and connections (called a Studio Setup document). Chapter 11: Using OMS with MIDI Manager discusses using OMS with MIDI Manager. You should read Part Two while seated at the Macintosh.
- **OMS Reference**—This part is a detailed OMS reference. Its chapters discuss special or non-standard connections, using OMS with the MIDI Time Piece, the OMS Setup application's menu items, and trouble-shooting. Refer to this part whenever you need more information on a particular feature or if you're having trouble with your Studio Setup document.

Appendix A discusses standard Opcode editing techniques and Appendix B is an OMS Glossary.

CHAPTER 2: Software Installation & Definitions

Installing OMS

Generally, there are two types of OMS disks: one with an OMS Installer and one without an OMS Installer. The differences are as follows:

- **OMS with OMS Installer**—An OMS disk that has its own installer is marked "Installer Disk". This disk is usually included with OMS updates or with parent applications that don't include their own OMS Installer. Use this disk to install OMS. Specific installation instructions are included in a Read Me folder on this disk.
- **OMS without OMS Installer**—Sometimes, when OMS is included as part of an OMS-compatible application (such as a sequencer, librarian, or notation program), the parent application handles OMS installation. In this situation, the OMS disk is not marked as an installer disk. Use the parent application's Installer to install OMS. OMS installation instructions are included in a Read Me folder on the parent application's installation disk.

Look at the label on your OMS disk to see if it contains an Installer. If it does, follow the installation instructions on that disk to install OMS. If your OMS disk does not contain an Installer, find the parent application's Installer and read the installation instructions on that disk to install OMS.

NOTE: If you experience a crash when installing OMS, remove any virus-checking INITs from your System folder, restart your Macintosh, and run the Installer again.

What's Installed

The Installer places all the necessary OMS files onto your hard disk automatically. After running the Installer and restarting your Macintosh, you can begin to use OMS.

This section shows you exactly what files the Installer places onto your hard disk and where it places them.

If you are updating from an older version of OMS, your previous Studio Setup documents will be read by the new OMS Setup application.

CAUTION: Do not relocate or rename any files or folders that the Installer places in the System Folder. You may delete unnecessary files, but some files are essential for OMS operation. See the "Software Definitions" on page 10 for more information.

Your installation may look slightly different depending on which OMS drivers you choose to install.

System 7

When you install OMS on a Macintosh running System 7, the Installer creates a folder named "OMS Folder" and places it in the System Folder. It inserts into that folder any OMS drivers that you choose to install, a device information file, and a minimal Studio Setup document. It places the Opcode MIDI System in the Extensions Folder, and the OMS Setup application at the top level of your hard disk. You can put OMS Setup in whatever folder is most convenient for you.

Figure 2.1 illustrates where the installer places files (for System 7).

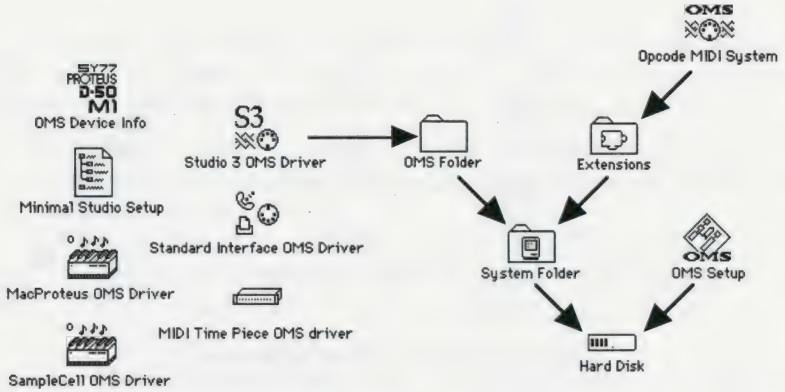

Figure 2.1: Software Locations for System 7

If you choose to install MIDI Manager, four additional files will be placed on your hard disk: MIDI Manager is put into the Extensions Folder, PatchBay is put at the top level of your hard disk, and PatchBay Help and OMS MIDI Manager Setup are placed in the System Folder. You can put PatchBay in whatever folder is most convenient for you.

System 6

When you install OMS on a Macintosh running System 6, the Installer creates a folder named "OMS Folder" and places it in the System Folder. It inserts into that folder any OMS drivers that you choose to install, a device information file, and a minimal Studio Setup document. It places the Opcode MIDI System in the System Folder, and the OMS Setup application at the top level of your hard disk. You can put OMS Setup in whatever folder is most convenient for you.

Figure 2.2 illustrates where the installer places files (for System 6).

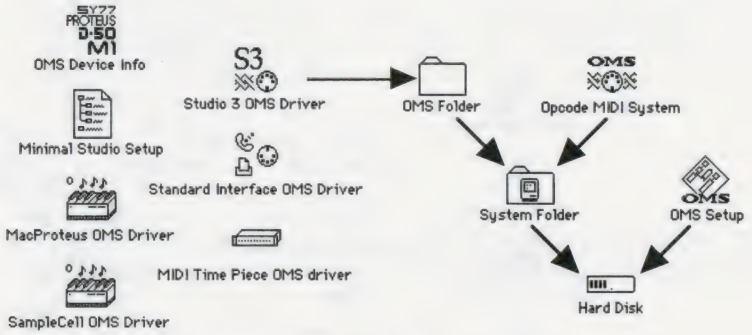

Figure 2.2: Software Locations for System 6

If you choose to install MIDI Manager, four additional files will be placed on your hard disk: MIDI Manager, PatchBay Help and OMS MIDI Manager Setup are placed in the System Folder, and the PatchBay application is put at the top level of your hard disk. You can put PatchBay in whatever folder is most convenient for you.

Updating OMS

Always run the Installer when you update older versions of OMS. Updates to OMS often include driver updates and changes to other OMS files. The Installer updates all necessary drivers, INITs, files, and applications with the latest versions automatically. Using the Installer to update OMS prevents possible errors between various file versions.

When you update OMS and use the Installer, your old Studio Setup documents will be compatible with the new version of OMS.

❑ Software Definitions

This section describes each file that the installer could possibly place on your hard disk. You only have to install those files you think you'll need. Future releases of OMS may add new files or features, so consult the READ ME document on your master disk for additional information.

Drivers

OMS drivers allow OMS to work with a variety of products that connect directly to the Macintosh. You may remove any drivers that you don't need from your hard disk. The following drivers are currently available:

- Standard Interface OMS Driver—Provides the ability for OMS to work with any standard Macintosh MIDI Interface (such as a MIDI Translator, or Studio Plus Two).
- Studio 3 OMS Driver—Use this driver if you have an Opcode Studio 3 MIDI interface connected to the Macintosh. It adds a special Studio 3 menu to OMS Setup that allows you to configure the interface's SMPTE functions and ports.
- MIDI Time Piece OMS Driver—Provides the ability for OMS to work with a Mark of the Unicorn MIDI Time Piece.
- SampleCell OMS Driver—Provides the ability for OMS to work with a Digidesign SampleCell card (v1.2 or higher), without requiring MIDI Manager.
- MacProteus OMS Driver—Provides the ability for OMS to work with a Digidesign MacProteus card, without requiring MIDI Manager.
- Studio 4 OMS Driver—This driver is available only if you purchase an Opcode Studio 4 MIDI interface and allows OMS to work with the Studio 4. It is not included with basic OMS.
- Studio 5 OMS Driver—This driver is available only if you purchase an Opcode Studio 5 MIDI interface and allows OMS to work with the Studio 5. It is not included with basic OMS.

Opcode and other manufacturers continue to develop new OMS drivers. Check new product disks for new OMS drivers and new product manuals for OMS driver definitions.

Opcode MIDI System

This is the system extension (or INIT) that routes MIDI between applications and MIDI devices. You should not remove this file from your hard disk.

OMS Setup Application

OMS Setup is an application that you use to tell OMS about your MIDI studio. This information is contained and displayed in a Studio Setup document. You

can create more than one Studio Setup document to mirror more than one studio setup, but you can only use one Studio Setup document at a time.

If you change the connections in your MIDI studio or add or remove a device, use the OMS Setup application to make the corresponding changes in the Studio Setup document or create a new document that accurately represents the changes.

You should not remove this application from your hard disk.

OMS Device Info

This file contains information about various MIDI devices. It partially determines which devices appear in the manufacturer/model menus in OMS Setup (Other applications may install their own additions to OMS Device Info as separate files and, if you use Galaxy, any devices in the Galaxy Installed Modules file are added to the manufacturer/model menus). The manufacturer/model menus are discussed in Chapter 8: Defining MIDI Devices and Patchbays and Chapter 13: OMS Setup Menus. You should not remove this file from your hard disk.

Minimal Studio Setup

Minimal Studio Setup is a simple Studio Setup document consisting of a standard interface connected to any available Macintosh serial port and to a generic MIDI device named "Modem" or "Printer". The minimal Studio Setup document is for studios with constantly changing studio setups, or for people who wish to continue using Macintosh MIDI software the "old-fashioned" way—when MIDI interfaces supported only 16 MIDI channels per port and devices had names like "Modem-1" or "Printer-10". See "Making Decisions" on page 15 for more information.

OMS Current State

The OMS Current State file isn't actually installed; it's created automatically the first time you run OMS. It's located in the OMS Folder and contains various preferences and the name and location of your current Studio Setup document. It also contains the name and location of your current Patch document if you're using the OMS Setup+Patches application (included with the Studio 4 and Studio 5). If you remove this file from your hard disk, OMS will

forget the current Studio Setup and Patch documents and reset all preferences to their factory settings.

MIDI Manager

Apple's MIDI Manager is needed for inter-application MIDI communication, running multiple programs which use system timing services, and communicating with some MIDI hardware. No Opcode hardware or software requires it.

MIDI Manager is not installed by default. If you install it and later find that you don't need it, you may remove it from your hard disk.

PatchBay

You use Apple's PatchBay application to connect various devices and applications when using MIDI Manager. PatchBay is installed when you choose to install MIDI Manager. If you don't use MIDI Manager, you may remove PatchBay from your hard disk. Opcode recommends using the PatchBay application and not the PatchBay DA with OMS. The PatchBay DA runs out of memory quicker than the application.

PatchBay Help

This is a help file for the PatchBay application. It's installed automatically when you choose to install MIDI Manager. If you don't use MIDI Manager, you may remove PatchBay Help from you hard disk.

OMS MIDI Manager Driver

The OMS MIDI Manager Driver acts as a "bridge" between MIDI Manager applications and OMS, and is a replacement for the Apple MIDI Driver. It is installed when you choose to install MIDI Manager. If you'll never use MIDI Manager, you should remove the OMS MIDI Manager Driver from your hard disk.

Serial Switch

The serial switch is required (at the time of this publication) for the following computers: IIfx, Quadra 900, Quadra 950. If you have one of these computers, then you must use this control panel in order to use MIDI applications. Choose "Compatible" instead of "Faster" in the control panel if you're running MIDI applications. The Serial Switch is installed automatically only if you have one of the requisite computers. If you do not use these computers, and you've manually installed the Serial Switch, you may remove it from your hard disk.

CHAPTER 3: Quick Start Guide to OMS

If you're a Macintosh and MIDI expert, this chapter and the on-line help may be all you need to start using OMS. It's very brief and assumes a fairly high level of Macintosh and MIDI knowledge. You should read this chapter even if your MIDI and computer knowledge are limited—it provides a good background for the tutorial in Part Two of this manual.

❑ Making Decisions

To begin using OMS, restart your Macintosh after you've installed OMS. If you've never used OMS, then the first time you launch the OMS Setup application, you'll need to make some decisions. Specifically, you must decide whether you want to use a minimal Studio Setup or a custom Studio Setup.

- A minimal Studio Setup emulates an "old-fashioned" MIDI studio—when MIDI interfaces supported only 16 MIDI channels per port and devices had names like "Modem-1" or "Printer-10". You cannot use a minimal Studio Setup if you have a multi-port MIDI interface (such as a Studio 4, Studio 5 or MIDI Time Piece), a NuBus MIDI card (such as MacProteus or SampleCell) or an OMS-compatible patch librarian (such as Galaxy). If you choose the minimal Studio Setup option, then OMS uses the minimal Studio Setup document—you won't need to create your own Studio Setup documents.
- A custom Studio Setup OMS allows you to define Studio Setup documents that accurately mirror the connection of devices in your MIDI studio. It takes some time to define a custom Studio Setup document, but once its done, you never need to define your MIDI studio again. All

OMS-compatible applications gain knowledge about your studio from the custom Studio Setup document.

Decide which option is best for you and proceed.

❑ Making Studio Setup Documents

If you decide to use a custom Studio Setup, then you use the OMS Setup application to describe all the MIDI NuBus cards, devices, interfaces and patchbays in your studio. You tell OMS about your studio setup only once. After that, all OMS-compatible applications (including all of Opcode's core programs), will refer to OMS for information about your MIDI studio. OMS stores your studio information in a Studio Setup document. You can store any number of Studio Setup documents to describe any number of studios or studio configurations, but OMS can reference only one Studio Setup document at a time. This is called the *current* Studio Setup document.

Use the OMS Setup application to design Studio Setup documents. Any time you tell OMS Setup to create a new Studio Setup document, OMS searches the selected Macintosh serial ports and all NuBus slots for MIDI devices. When it finds them, it opens a new Studio Setup document.

The Studio Setup document (see Figure 3.2 on page 18) is a graphic representation of the connection between all the MIDI devices in your studio. All OMS-compatible applications derive their knowledge of your studio from this document.

A new Studio Setup document contains icons for only those items connected directly to the Macintosh (such as MIDI interfaces and MIDI NuBus cards). You can double-click most interface icons to open a dialog for matching OMS settings with the interface. OMS does not automatically recognize MIDI devices (such as synthesizers or MIDI patchbays) that are not connected directly to the Macintosh. You have to tell OMS about those devices.

Every time you select **New Device** from OMS Setup's **Studio** menu, a MIDI Device Info dialog opens. Use the MIDI Device Info dialog to tell OMS about each and every MIDI device in your studio.

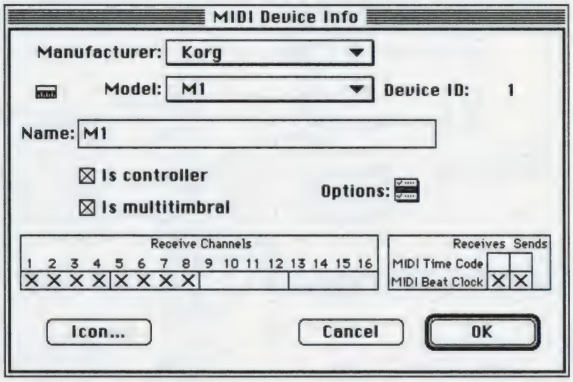

Figure 3.1: Sample MIDI Device Info Dialog

If you use MIDI patchbays, select **New Patcher** from OMS Setup's **Studio** menu to open a MIDI Device Info dialog for patchbays.

Use the Studio Setup document to connect devices, patchbays and interfaces to reflect your studio's wiring. To connect devices, simply click a device icon and drag it over the icon of the device to which you want it connected. Set MIDI port numbers and patcher program change numbers in their respective numericals.

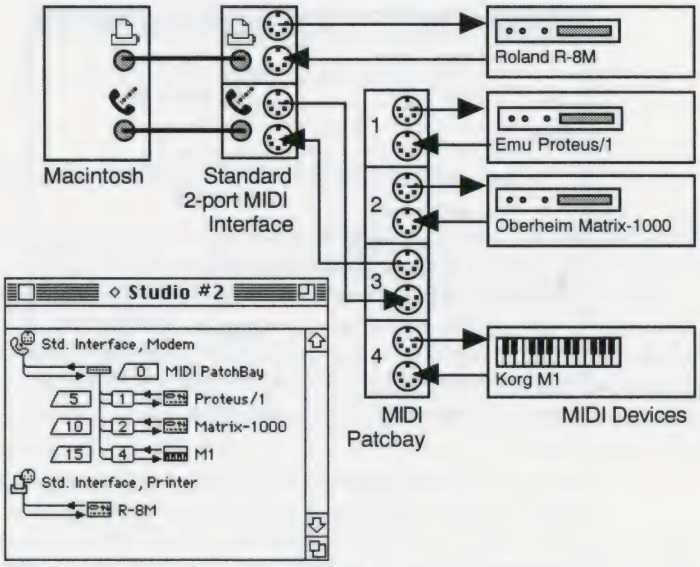

Figure 3.2: Studio Schematic w/Studio Setup Document

❑ Using OMS with OMS-Compatible Applications

Once you've defined a current Studio Setup document, OMS knows each instrument's name, port, MIDI reception channel(s), device ID and many other details. This information is provided to all OMS-compatible applications such as Vision, Studio Vision, Galaxy, Galaxy Plus Editors, MAX, CUE, Track Chart and others. Within these applications, you simply select and work with devices by name—OMS handles the rest. Any time you change your current Studio Setup document, OMS automatically provides the new information to all your OMS-compatible applications.

❑ Using OMS with MIDI Manager

OMS can operate with or without MIDI Manager. In most instances (particularly when working with OMS-compatible software), you won't need to use MIDI Manager. If, however, you need its time-sharing or inter-application communication features, you can use the OMS MIDI Manager Driver.

The OMS MIDI Manager driver acts as a bridge between MIDI Manager applications and OMS. Disable the Apple MIDI driver (as discussed in Chapter 11: Using OMS with MIDI Manager) or remove it from your System Folder.

Double-click the OMS MIDI Manager driver in PatchBay to open its setup window. Within that window you can define up to three source ports, up to eleven destination ports, and the sync mode. Connect the OMS MIDI Manager driver to non-OMS MIDI Manager applications just as if you were using the Apple MIDI driver. You do not need to connect OMS applications to the OMS MIDI Manager driver—these applications communicate with OMS "behind MIDI Manager's back".

PART 2: OMS Tutorial

CHAPTER 4: Connecting your MIDI Studio

In this chapter you'll connect the various interfaces, patchers, and MIDI devices in your studio. All MIDI studios are different, so the techniques discussed in this chapter are very general. You should consult the manuals that came with your MIDI devices, patchers and interfaces to set up the best MIDI studio for your needs.

❑ Connect your MIDI Interface to your Macintosh

If you have not already done so, connect your MIDI interface to the Macintosh and your MIDI devices and patchers to the interface. Consult your interface, patcher and synthesizer manuals for more details. The following examples will aid you in connecting your devices. Follow the example that most closely resembles your MIDI studio.

If your MIDI studio is already connected, you can skip this chapter and proceed to Chapter 5: Opening a New Studio Setup Document.

Connecting a Single Port Standard MIDI Interface

This example assumes that you have a single-port standard MIDI interface connected to the Macintosh Modem port and to three MIDI synthesizers.

1. **Turn off power to both your Macintosh and your MIDI interface.**
2. **Attach your MIDI interface to either the Macintosh Modem port or Printer port.**

   This example assumes you'll use the Modem port.
3. **Connect standard MIDI cables from the MIDI IN connectors of each synthesizer to the MIDI OUT connectors on the Macintosh interface.**
4. **Connect a standard MIDI cable from the MIDI OUT connector of your master controller to the MIDI IN connector on the interface box.**
5. **Turn on your MIDI interface and your Macintosh.**

Figure 4.1 illustrates a simple studio with a single port standard MIDI interface.

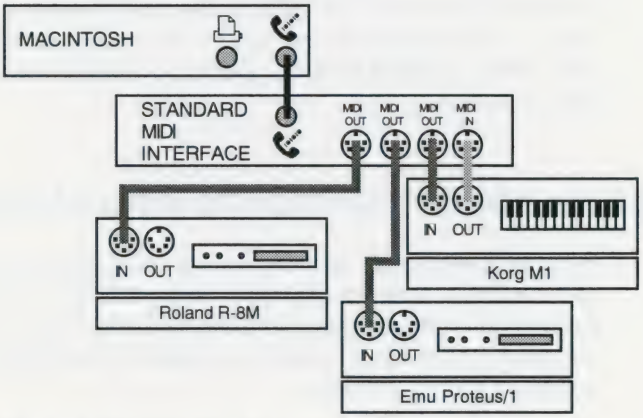

Figure 4.1: Standard One-Port MIDI Interface

Connecting a 2-Port Standard MIDI Interface and Patcher

This example assumes that you have a dual-port standard MIDI interface connected to both Macintosh serial ports, and that you have a MIDI patcher to facilitate additional MIDI inputs and outputs.

1. **Turn off power to your Macintosh, MIDI interface and patcher.**
2. **Connect either or both of your Macintosh serial ports to the MIDI interface.**
   This example assumes you connect both.
3. **Connect a patcher MIDI IN to one of the interface's MIDI OUTs, and the patcher's MIDI OUT to the interface's like-numbered MIDI IN.**
4. **Connect other MIDI devices directly to the patcher.**
5. **Turn on your patcher, interface and Macintosh.**

Figure 4.2 illustrates a typical studio with a two-port standard MIDI interface and a patcher.

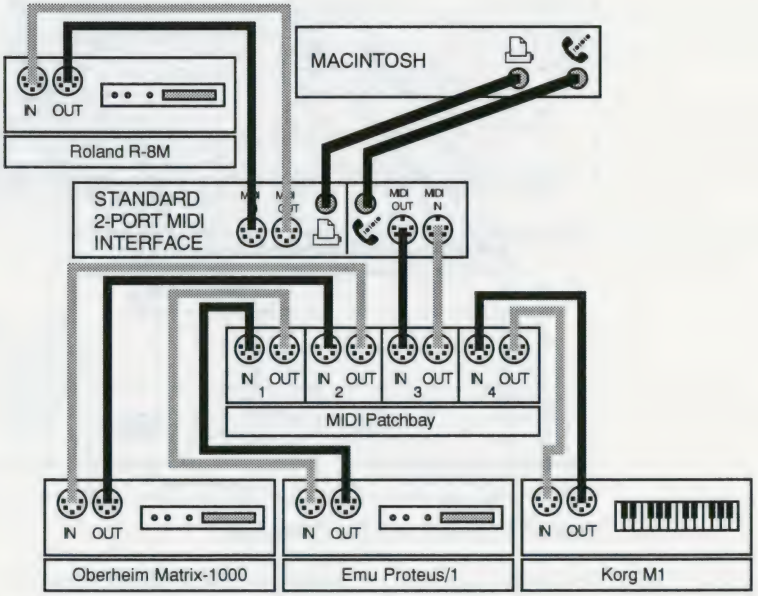

Figure 4.2: Standard Two-Port Interface w/Patcher

Connecting a Multi-Port Interface

This example assumes that you have a multi-port MIDI interface connected to both Macintosh serial ports.

1. **Turn off power to both your Macintosh and your interface.**
2. **Connect either or both of the Macintosh serial ports to the interface.**
   This example assumes that you connect both.
3. **Connect MIDI devices to like-numbered pairs of MIDI ports on the interface.**
4. **Turn on your interface and Macintosh.**

Figure 4.3 illustrates a simple studio incorporating a Studio 5. Use similar connections for the Studio 4, MIDI Time Piece or other multi-port interfaces.

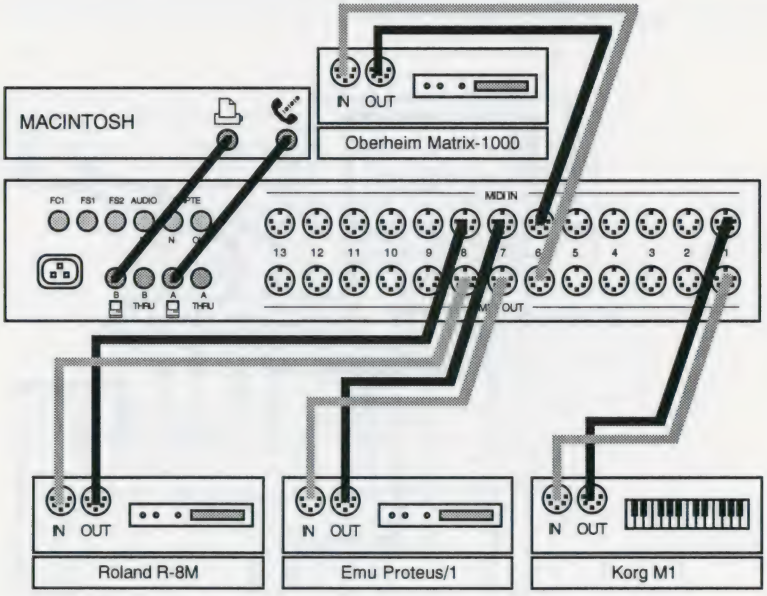

Figure 4.3: Studio 5 Two-Port Connection

CHAPTER 5: Opening a New Studio Setup Document

In this chapter you'll use the OMS Setup application to open a new Studio Setup document that contains device drivers for all MIDI interfaces and NuBus cards that are connected to your Macintosh.

❑ Launching the OMS Setup Application

1. **Double-click the OMS Setup icon located on your hard disk to open the OMS Setup application.**

OMS Setup

Figure 5.1: OMS Setup Icon

AppleTalk

If AppleTalk is active the first time you launch OMS Setup, you'll see the dialog box shown in Figure 5.2. If AppleTalk is not active, you will not see this dialog box and can proceed to "Configuring OMS" on page 29.

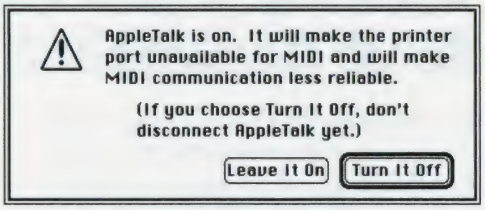
AppleTalk is on. It will make the printer port unavailable for MIDI and will make MIDI communication less reliable.
(If you choose Turn It Off, don't disconnect AppleTalk yet.)
Leave It On
Turn It Off

Figure 5.2: AppleTalk Alert Dialog Box

You should not use AppleTalk with MIDI applications, so...

2. **Click Turn it Off in the AppleTalk Alert box to turn off AppleTalk.**

   OMS Setup remembers whether you want AppleTalk on or off, and future alert boxes display your previous AppleTalk preference as the default (highlighted) button.

   You'll see the dialog box shown in Figure 5.3

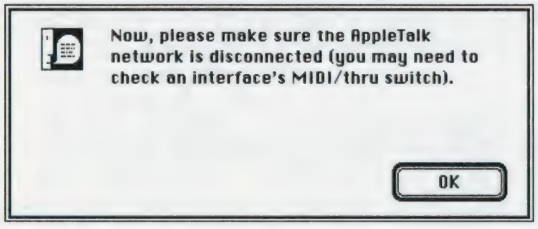

Figure 5.3: Disconnect AppleTalk Dialog Box

3. **Disconnect your AppleTalk network and click OK.**

BACKGROUND: AppleTalk is the Macintosh communication protocol for local area networks (LANs). If AppleTalk is active, no MIDI communication can take place over the Printer port and MIDI communication is made less reliable over the Modem port.

❑ Configuring OMS

After double-clicking the OMS Setup application and disabling AppleTalk (if necessary), you'll see the dialog box shown in Figure 5.4.

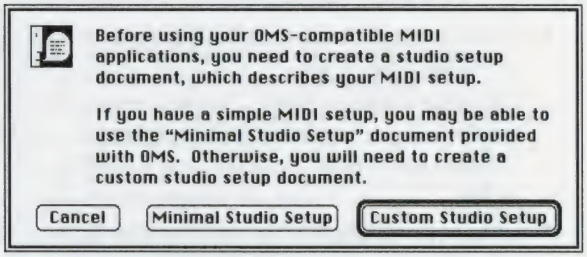
Before using your OMS-compatible MIDI applications, you need to create a studio setup document, which describes your MIDI setup.
If you have a simple MIDI setup, you may be able to use the "Minimal Studio Setup" document provided with OMS. Otherwise, you will need to create a custom studio setup document.
Cancel
Minimal Studio Setup
Custom Studio Setup

Figure 5.4: Configuring OMS Dialog

You have a choice of creating either a minimal Studio Setup document or a Custom Studio Setup document. The choice you make in this dialog box depends on your MIDI studio and the way you like to organize it.

The Custom Studio Setup Option

With this option, you can create Studio Setup documents that accurately mirror the connection of devices in your MIDI studio. It takes several minutes to create a custom Studio Setup document, but once its done, all OMS-compatible applications gain knowledge about your studio from the custom Studio Setup document.

If you decide to use a custom Studio Setup, see "Customizing OMS" on page 31.

The Minimal Studio Setup Option

With this option, OMS emulates an "old-fashioned" MIDI studio—when MIDI interfaces supported only 16 MIDI channels per port and devices had names like "Modem-1" or "Printer-10". The main reasons for using a minimal Studio Setup are:

- You're new to MIDI sequencing and want to start learning the basics without spending a lot of time setting up your studio. You'll opt to learn the advantages of OMS at some later date.

- You run a busy project studio with a steady stream of clients who bring their own MIDI racks. You don't have time to create new Studio Setup documents for each new client.

You cannot not use the Minimal Studio Setup option in the following instances:

- You're using a multi-port MIDI interface such as a Studio 4, Studio 5 or MIDI Time Piece.

  Since the minimal Studio Setup recreates the old ways, it assumes you're using a standard MIDI interface. If you're using one of the modern multi-port interfaces, you'll need to create a custom Studio Setup.
- You have a NuBus MIDI card such as SampleCell or MacProteus.

  A minimal Studio Setup (since it's emulating an "old-fashioned" studio) cannot communicate with NuBus MIDI cards installed in your Mac. If you want to access NuBus MIDI cards as though they were stand-alone devices, you must create a custom Studio Setup.
- You need to use a patch librarian program such as Galaxy.

  Since Galaxy looks to OMS for information about your MIDI studio, OMS must know about your devices. To define devices in OMS, you must use a custom Studio Setup.

If you decide to use the minimal Studio Setup option:

1. **Click the Minimal Studio Setup button.**

   You'll see a series of dialog boxes confirming that your studio is eligible to use the minimal Studio Setup.

   You can skip the confirmation boxes by holding down the option key when you click the Minimal Studio Setup button.
2. **Respond to the questions in each of the subsequent dialog boxes.**

   If your response to any of the dialogs indicates that you're unable to use the minimal option, you'll return to the Configuring OMS Dialog as shown in Figure 5.4 on page 29.

   If your response to the dialogs indicate that you're able to use the minimal option, OMS uses the minimal Studio Setup document that's installed in the OMS folder in your System folder. See "Minimal Studio Setup" on page 12 for more information.

You can now quit OMS Setup, close this manual and begin to use your OMS-compatible applications as though OMS did not exist.

❑ Customizing OMS

If you decide to use the custom Studio Setup option:

1. **Click the Custom Studio Setup button.**
   You'll see the dialog shown in Figure 5.5.

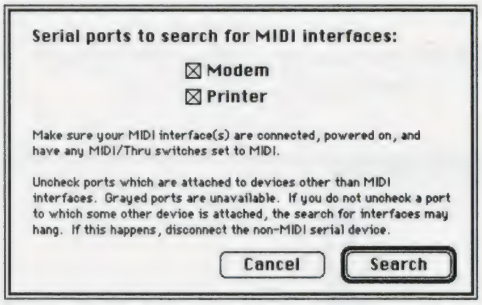
Serial ports to search for MIDI interfaces:
Modem
Printer
Make sure your MIDI interface(s) are connected, powered on, and have any MIDI/Thru switches set to MIDI.
Uncheck ports which are attached to devices other than MIDI interfaces. Grayed ports are unavailable. If you do not uncheck a port to which some other device is attached, the search for interfaces may hang. If this happens, disconnect the non-MIDI serial device.
Cancel
Search

Figure 5.5: Startup Port Selection Dialog Box

2. **Check the check boxes for ports that have MIDI interfaces attached.**
   If you don't have a MIDI interface connected to a port, don't check a box for it.
3. **Click OK.**

A progress dialog box opens as OMS searches the selected port(s) for MIDI interfaces and the Macintosh for MIDI cards (such as SampleCell or MacProteus).

A new, untitled Studio Setup document opens with an icon for any MIDI interfaces and NuBus MIDI cards attached to your Macintosh. It will not show your synthesizers and patchers until you tell OMS Setup about them.

If You Have Problems

If OMS didn't find all of your hardware, then:

- Make sure your MIDI interfaces are connected to the serial ports.
- Make sure any MIDI/Thru switches on your MIDI interface are in the MIDI position.
- Make sure you're not running AppleTalk or other software that uses the serial ports.

To recognize a NuBus MIDI card (such as SampleCell), your Macintosh must have a corresponding OMS driver installed in its System Folder.

Correct any errors, close the Studio Setup document, then choose **Interfaces** from the **Studio** menu.

Examples

The simple MIDI studio example shown in Figure 4.1 on page 24 produces the Studio Setup document shown in Figure 5.6.

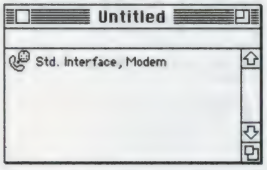

Figure 5.6: New Studio Setup Document for Figure 4.1

Similarly, the studio shown in Figure 4.2 on page 25 produces the Studio Setup document shown in Figure 5.7, and the studio shown in Figure 4.3 on page 26 produces the Studio Setup document shown in Figure 5.8.

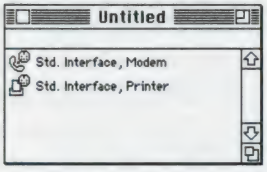

Figure 5.7: New Studio Setup Document for Figure 4.2

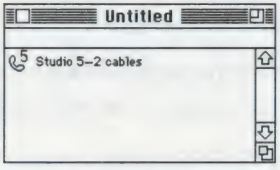

Figure 5.8: New Studio Setup Document for Figure 4.3

CHAPTER 6: Saving a Studio Setup and Making it Current

Before you get too far along, you'll want to save the work that you've already done.

In this chapter, you'll save your Studio Setup document and make it the current Studio Setup referenced by OMS.

❑ Save and Make Current

1. **Choose Save and Make Current from the File menu to save your Studio Setup document and to make it the current Studio Setup document.**
2. **Name the file and click Save.**
   You can save the file anywhere you like.

When you make a Studio Setup document current, you tell OMS that this document accurately reflects the connection and configuration of your MIDI devices. OMS applications derive their knowledge of your studio only from the current Studio Setup document. You may have several Studio Setup documents, each of which reflects different studio configurations (or studios). Only one Studio Setup document, however, can be the current document. The current Studio Setup document is indicated by a small diamond to the left of its name (as illustrated in Figure 6.1).

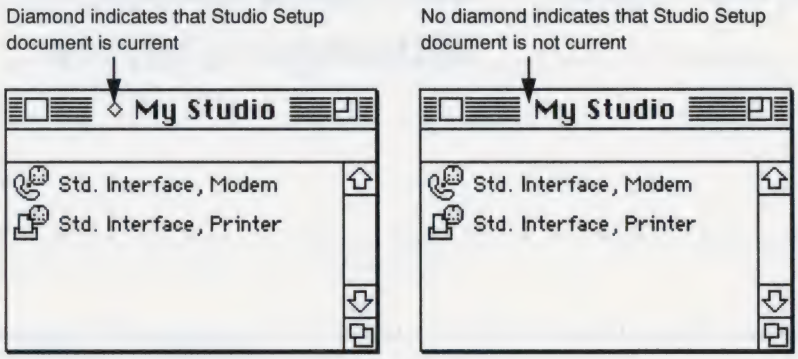
Diamond indicates that Studio Setup document is current
No diamond indicates that Studio Setup document is not current
My Studio
Std. Interface, Modem
Std. Interface, Printer
My Studio
Std. Interface, Modem
Std. Interface, Printer

Figure 6.1: Indicating Current Studio Setup Document

CHAPTER 7: Configuring the OMS Drivers

Now that you have a Studio Setup document that recognizes all MIDI interfaces and MIDI cards attached to your Macintosh, you'll need to verify the configuration of their OMS drivers.

This chapter tells you how to configure the various drivers that appear in your Studio Setup document. Just read the sections that pertain to your studio, then proceed to Chapter 8: Defining MIDI Devices and Patchbays.

❑ Standard Interface

If the Standard Interface OMS driver is in your OMS folder and one or more standard MIDI interface are connected to the Macintosh, you'll see a standard interface icon for each port that OMS Setup finds connected to a standard interface.

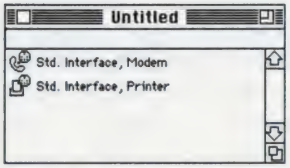

Figure 7.1: Studio Setup Document w/Standard Interfaces

1. **Double-click each interface icon in your Studio Setup document to open its port configuration dialog box.**

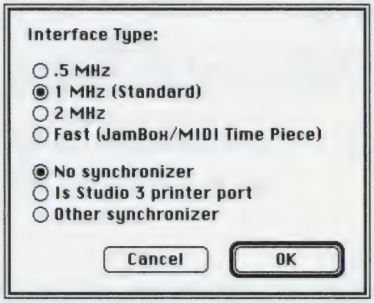

Figure 7.2: Standard Interface Configuration Dialog

2. **Select the appropriate clock frequency setting for your interface.**
   This is usually determined automatically. See your interface manual if you have problems.
3. **Select the proper synchronization option from the bottom of the dialog.**
   Select "No synchronizer" if the interface connected to this port does not have built in synchronizer functions. Select "Is Studio 3 printer port" if the port you are defining is connected to the Opcode Studio 3 printer port. Select "Other synchronizer" if the interface connected to this port uses a built in synchronizer other than the Studio 3.
4. **Click OK.**

STUDIO 3 NOTE: Most Studio 3 owners will use the Studio 3 OMS driver that's loaded automatically when OMS Setup detects a Studio 3 connected to the Macintosh. The "Is Studio 3 printer port" option is available if you want to use the Standard Interface driver with the Studio 3.

MTP NOTE: Generally, if you use a MIDI Time Piece, you'll use the MIDI Time Piece OMS driver that's loaded automatically if OMS Setup detects a MIDI Time Piece connected to your Macintosh. The "Fast (JamBox/MIDI Time Piece)" option is available if you want to use the Standard Interface driver with a MIDI Time Piece in fast mode.

Studio 3

If the Studio 3 OMS driver is in your OMS folder and the Studio 3's Printer port is connected to the Macintosh when OMS Setup searches for interfaces, you'll see a dialog box asking if the Studio 3's Modem port is also connected to the Macintosh. Respond to the dialog box and you'll see a Studio 3 icon for each port that's connected to a Studio 3.

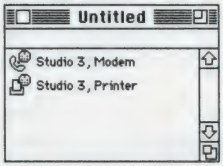

Figure 7.3: Studio Setup Document w/Studio 3

The words "Modem" and "Printer" refer to the Macintosh's ports, not the Studio 3's. A Studio 3 menu appears in the OMS Setup menu bar if the Studio 3 OMS driver is in your OMS folder and OMS Setup finds the Studio 3's Printer port connected to the Macintosh. Your Studio 3 manual discusses port configuration and SMPTE functions.

NOTE: In order to set up and control the Studio 3, you must connect the Studio 3's Printer port to one of the Macintosh serial ports. Studio 3 timecode functions, MIDI port configuration and foot controller channel all communicate over the Studio 3's Printer port.

Studio 4

If the Studio 4 OMS driver is in your OMS folder and one or more Studio 4's are connected to the Macintosh, you'll see an icon for each Studio 4 that OMS Setup finds connected to your Macintosh.

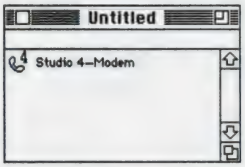

Figure 7.4: Studio Setup Document w/Studio 4

1. **Double-click the Studio 4 icon to open its port configuration dialog box.**
2. **Set the radio buttons as discussed in your Studio 4 manual.**
3. **Click OK.**

A Studio 4 menu appears in the OMS Setup menu bar if the Studio 4 OMS driver is in your OMS folder and OMS Setup finds a Studio 4 connected to the Macintosh. Refer to your Studio 4 manual for additional details.

❑ Studio 5

If the Studio 5 OMS driver is in your OMS folder and one or more Studio 5's are connected to the Macintosh, you'll see an icon for each Studio 5 that OMS Setup finds connected to your Macintosh. A Studio 5 menu appears in the OMS Setup menu bar if the Studio 5 OMS driver is in your OMS folder and OMS Setup finds a Studio 5 connected to the Macintosh. Refer to your Studio 5 manual for more information.

❑ MIDI Time Piece

The MIDI Time Piece is Mark of the Unicorn's MIDI Interface. If the MIDI Time Piece OMS driver is in your OMS folder and one or more MTP's are connected to the Macintosh, you'll see one or more MTP icons in the Studio Setup document.

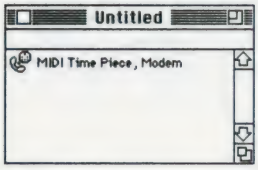

Figure 7.5: Studio Setup Document w/MIDI Time Piece

1. **Double-click the MIDI Time Piece icon to open its port configuration dialog box.**

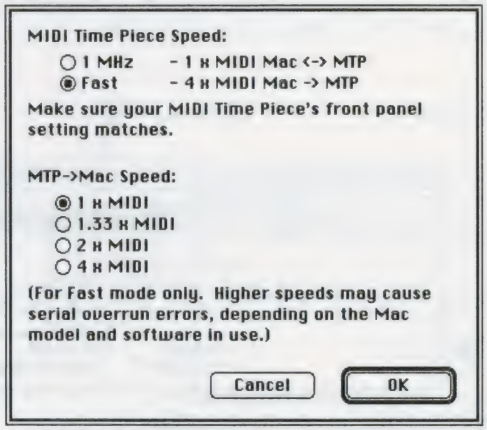
MIDI Time Piece Speed:
1 MHz - 1 x MIDI Mac <-> MTP
Fast - 4 x MIDI Mac -> MTP
Make sure your MIDI Time Piece's front panel setting matches.
MTP->Mac Speed:
1 x MIDI
1.33 x MIDI
2 x MIDI
4 x MIDI
(For Fast mode only. Higher speeds may cause serial overrun errors, depending on the Mac model and software in use.)
Cancel
OK

Figure 7.6: MIDI Time Piece Configuration Dialog

2. **Make sure the MIDI Time Piece Speed radio buttons reflect the setting of the switch on the front panel of the MIDI Time Piece.**
3. **If you use Fast mode, choose a MTP->Mac Speed from the bottom set of radio buttons.**

   The default value should work in most instances. If your Macintosh reports serial overrun errors, choose a slower MTP->Mac communication speed.
4. **Click OK.**

NOTE: Occasionally, a MIDI Time Piece will appear in OMS Setup as a Standard Interface. If this happens, turn the MTP off and back on again, close the Studio Setup document, click "Don't Save" when asked to save changes, then choose **New Studio Setup** from the **File** menu.

For more information about the MIDI Time Piece, refer to the section entitled "MIDI Time Piece Network Configurations" on page 88 and to your MIDI Time Piece manual.

SampleCell

Your Studio Setup document displays one SampleCell icon for each SampleCell card found by OMS Setup.

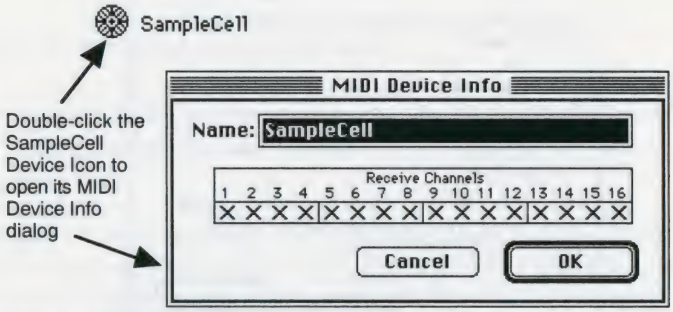
SampleCell
Double-click the SampleCell Device Icon to open its MIDI Device Info dialog
MIDI Device Info
Name: SampleCell
Receive Channels
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16
Cancel
OK

Figure 7.7: SampleCell Icon and Device Info Dialog

1. **Double-click each SampleCell icon to open its MIDI Device Info dialog box.**
2. **Use this dialog box to rename the device (if desired) and to set the MIDI receive channels for each SampleCell card.**

Make sure you have version 1.2 or higher of the SampleCell editor and the SampleCell driver. Remove the SampleCell MIDI Manager driver from your System Folder if you're using the OMS driver. The only time you need the original SampleCell MIDI Manager driver is if you choose to use MIDI Manager without OMS.

MacProteus

Your Studio Setup document displays one MacProteus icon for each MacProteus card found by OMS Setup.

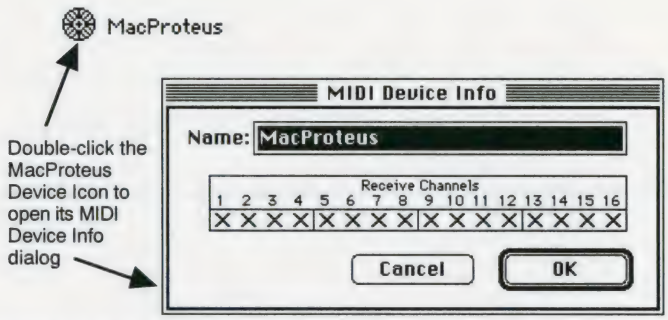
MacProteus
Double-click the MacProteus Device Icon to open its MIDI Device Info dialog
MIDI Device Info
Name: MacProteus
Receive Channels
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16
Cancel
OK

Figure 7.8: MacProteus Icon and Device Info Dialog

1. **Double-click each MacProteus icon to open its MIDI Device Info dialog box.**
2. **Use this dialog box to set the MIDI receive channels for each MacProteus card and to rename the device (if desired).**

Keep the MacProteus MIDI Manager driver in your System Folder if you wish to use the MacProteus Front Panel application—otherwise you can remove it.

The MacProteus Batteries INIT is compatible with the OMS MacProteus driver.

CHAPTER 8: Defining MIDI Devices and Patchbays

Now that you've saved a current Studio Setup document that's properly configured for your MIDI interface and NuBus cards, you'll need to define your various MIDI devices and MIDI patchbays.

This chapter tells you how to use OMS Setup to define MIDI devices (such as synthesizers, MIDI effect units and MIDI controllers) and also how to define MIDI patchbays.

❑ Defining MIDI Devices

In this section, you'll define all the MIDI devices in your studio. If you're using a MIDI patchbay, you'll need to refer to "Defining MIDI Patchbays" on page 47.

1. **If the current Studio Setup document isn't already open, choose Open Current Studio Setup from the File menu.**

   New devices are connected to the first interface in the Studio Setup document automatically. You can connect new devices to some other interface, patchbay, or MIDI device by selecting it prior to defining the new device.

Follow through these steps for each MIDI device in your studio. For detailed information, see the section titled "Studio Menu" on page 103.

2. **Choose New Device from the Studio menu to open a MIDI Device Information dialog box.**

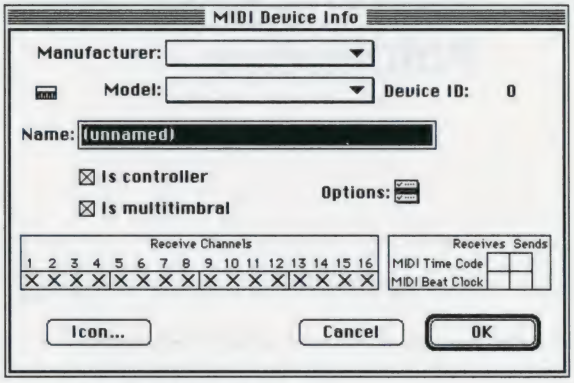

Figure 8.1: Device Info Dialog Box

3. **Choose a manufacturer from the pop-up Manufacturer menu by clicking the pop-up menu, dragging to the desired manufacturer and releasing the mouse.**

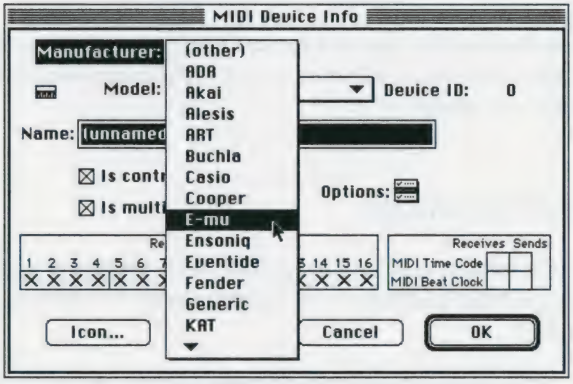

Figure 8.2: Choosing a MIDI Device's Manufacturer

4. **Choose a model from the pop-up Model menu by clicking the pop-up menu, dragging to the desired model and releasing the mouse.**

   For many devices, this will automatically set the "Is controller" and "Is multitimbral" boxes to their proper settings.

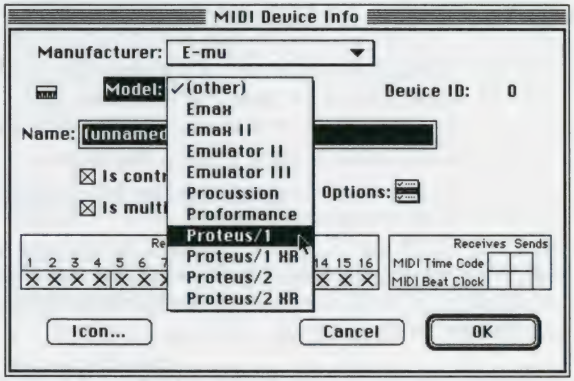

Figure 8.3: Choosing a MIDI Device's Model

If OMS doesn't list your MIDI device or if you wish to refer to the device by a different name, type a name into the Name field.

5. **Check the appropriate Controller and Multitimbral check boxes.**

   Check the "Is controller" check box if your MIDI device sends MIDI note or control data.

   Check the "Is multitimbral" check box if the MIDI device responds to MIDI on more than one channel.

6. **Check all the MIDI channels that will receive data.**

   If the "Is multitimbral" check box is not checked, your device can receive on only one MIDI channel. If the "Is multitimbral" check box is checked, you can select multiple receive channels.

7. **Set the Device ID numerical to match the device ID setting of your MIDI device.**

   If you'll be sending patches (or other system exclusive data) to and from a device, you'll need to set the Device ID numerical to match your unit's device ID. Device ID's are discussed in the section titled "Device ID (Devices Only)" on page 107.

   The Device ID numerical is set automatically to the MIDI Receive Channel if the "Is multitimbral" check box is not checked. You can enter a different Device ID number if you wish. If you don't know how to set a numerical, see Appendix A.

8. **Check the appropriate MIDI Time Code check boxes.**

   You need to check these boxes only if you intend to use MTC for synchronization and your MIDI Device sends or receives MIDI Time Code. Most common MIDI devices do not send or receive MIDI Time Code.

9. **Check the appropriate MIDI Beat Clock check boxes.**

   Many modern MIDI drum machines and synthesizers with built-in sequencers are able to send and receive MIDI Beat Clock. You should check these boxes if you want to synchronize playback of these various devices. Check the "Sends MIDI Beat Clock" check box if your MIDI device receives MIDI Beat Clock and you

intend to slave another device or Macintosh application to that timing data. Check the "Receives MIDI Beat Clock" check box if your MIDI device receives MIDI Beat Clock and you intend to synchronize the device to another timing source.

10. **Check the appropriate options in the pop-up Options menu.**

    Select "Uses MIDI Machine Control" and/or "Uses ARTInet" from the pop-up Options menu if your MIDI devices use either MIDI Machine Control or ARTInet.

11. **Click the Icon button to open a dialog box of icon choices for the device.**

    Click the icon that you wish to assign to that device, then click the OK button to return to the Studio Setup window.

    If you didn't click the Icon button, then click the MIDI Device Info dialog's OK button to return to the Studio Setup window. The newly defined device appears in the Studio Setup document connected either to the top MIDI interface or to a previously selected device.

Repeat steps 2 through 11 for every MIDI device in your studio (MIDI patchbays are discussed in the next section).

12. **Choose Save from the File menu to save your Studio Setup document.**

NOTE: If you select an interface in the Studio Setup document prior to defining a new device, the newly defined device will be connected to the selected interface. If you do not select an interface, the new device will be connected to the first interface in the Studio Setup document.

MIDI Device Example

Figure 8.4 illustrates a typical device.

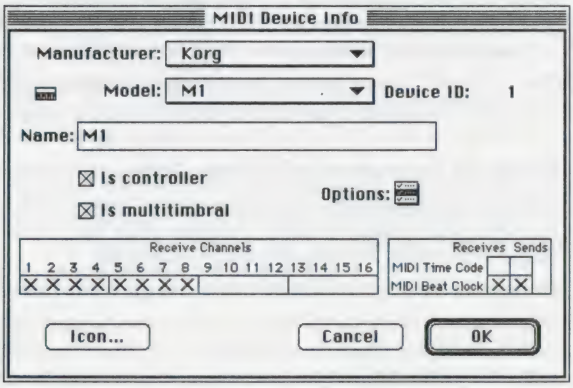

Figure 8.4: Sample Korg M1 Device Description

This example shows an M1 synthesizer. The M1 is a multitimbral instrument with an on-board sequencer. It can send and receive MIDI Beat Clock, has a keyboard for generating notes and can respond on eight MIDI channels at once (selection of channels 1-8 was arbitrary—you can use any MIDI channels you want).

❑ Defining MIDI Patchbays

OMS works with MIDI patchbays (sometimes called patchers, switchers or thru boxes) and automates the selection of programs within the patcher. If you're not using a MIDI patchbay, you may skip this section and proceed to the next chapter.

NOTE: You don't have to define multi-port MIDI interfaces (such as the Studio 5, Studio 4, or MIDI Time Piece) as patchbays. They're considered interfaces by OMS.

---

1. **If the Current Setup document isn't already open, choose Open Current Studio Setup from the File menu.**

Follow through these steps for each MIDI patcher in your studio. Detailed information is available in the section called "Studio Menu" on page 103.

2. **Choose New Patcher from the Studio menu to open a MIDI Device Information dialog for patchbays.**

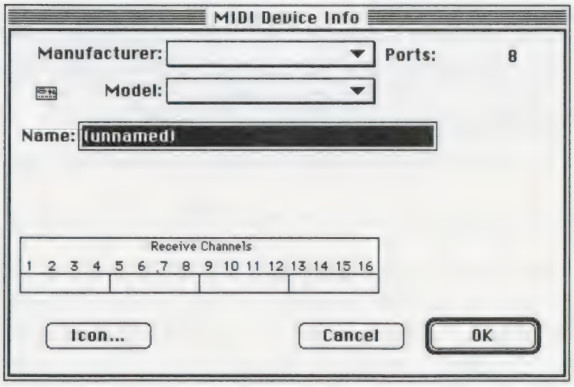

Figure 8.5: Patchbay Info Dialog Box

3. **Choose a manufacturer from the pop-up Manufacturer menu by clicking the pop-up menu, dragging to the desired manufacturer and releasing the mouse.**
4. **Choose a model from the pop-up Model menu by clicking the pop-up menu, dragging to the desired model and releasing the mouse.**

   If OMS doesn't list your MIDI patchbay or if you wish to refer to the device by a different name, type a name into the Name field.
5. **Set the Ports numerical to match the number of pairs of MIDI INs and OUTs on your MIDI patcher.**
6. **Check the MIDI channel on which your patcher responds to MIDI program change messages.**

   For example, the MIDI patchbay shown in Figure 8.6 receives on MIDI Channel 13.

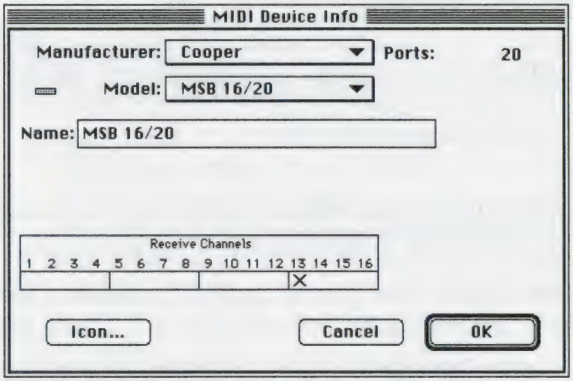

Figure 8.6: Setting Patchbay Receive Channel

7. **Click the Icon button to open a dialog box of icon choices for the device.**

   Click the icon that you wish to assign to that device, then click the OK button to return to the MIDI Device Info dialog.
8. **Click the MIDI Device Info dialog's OK button.**

   The newly defined patchbay will appear in the Studio Setup document.

Repeat Steps 2 through 8 for every MIDI patchbay in your studio.

If your studio contains more than one MIDI patchbay, your Studio Setup document will contain multiple patcher icons and their Device Info dialog boxes will contain an additional pop-up menu called "Send program changes to". See "Send Program Changes To (Patchers Only)" on page 109 if you're using more than one MIDI patchbay.

If your studio contains a MIDI patchbay that's connected to both the Modem and Printer port interfaces, see "Sharing a Patcher Between Two Ports" on page 84 and "Send Program Changes To (Patchers Only)" on page 109.

If you've been following this tutorial, your Studio Setup document now contains a description of every interface, NuBus card, MIDI device and MIDI patchbay in your studio.

9. **Choose Save from the File menu to save your current Studio Setup document.**

❑ Editing a Device or Patchbay

You can edit MIDI devices and patchbays in your Studio Setup document. This is useful when you change a device or make a mistake. To edit a MIDI device or patchbay:

1. **Click the device to select it and choose MIDI Device Info from the Studio menu.**

   Alternately, you can double-click the device icon to open its MIDI Device Info dialog automatically.
2. **Make any necessary changes, then click the OK button.**
3. **Choose Save from the File menu to save your current Studio Setup document and its changes.**

If you only want to edit a device's icon:

1. **Select the device and choose Device Icon from the Studio menu.**

   Alternately, you can option-double-click the device icon to open its Device Icon dialog box.
2. **Choose a new icon, then click the OK button.**
3. **Choose Save from the File menu to save your current Studio Setup document and its changes.**

CHAPTER 9: Connecting Devices in the Studio Setup Document

In this chapter, you'll connect all the device icons in your Studio Setup document to mirror the way that actual MIDI devices are connected in your studio.

When you finish connecting device icons, your Studio Setup document will function as a graphic representation of the MIDI components in your studio.

IMPORTANT: The Studio Setup document should reflect, as accurately as possible, the actual connection of MIDI devices in your studio. OMS-compatible applications derive their knowledge of the devices in your studio from the Studio Setup document.

❑ Automatic Device Connection

At this point in the tutorial, every OMS user will have a very different Studio Setup document. Before the tutorial proceeds, you should know a little about how devices connect in the Studio Setup document.

If you selected an interface in the Studio Setup document prior to defining a new device, the newly defined device is connected to the selected interface.

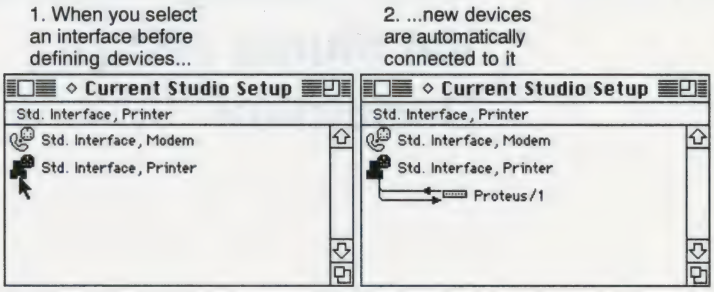

Figure 9.1: Connecting to a Selected Device

If you didn't select an interface in the Studio Setup document prior to defining a new device, the newly defined device is automatically connected to the first interface in the Studio Setup document.

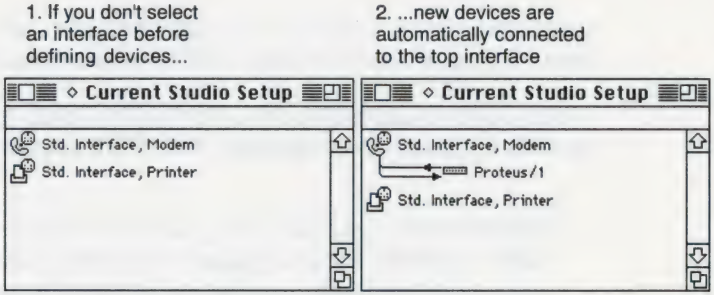
1. If you don't select an interface before defining devices...
2. ...new devices are automatically connected to the top interface
Current Studio Setup
Std. Interface, Modem
Std. Interface, Printer
Current Studio Setup
Std. Interface, Modem
Proteus/1
Std. Interface, Printer

Figure 9.2: Default New Device Connection

If the Studio Setup document doesn't reflect the connections between your MIDI devices, patchbays and interfaces, you'll need to make manual device connections. Rearranging device icons in your Studio Setup document is easy, and is discussed in the following section.

Manual Device Connection

To connect a device to an interface, patchbay or other MIDI device:

1. **Click and hold the mouse on a device.**
2. **Drag the mouse to the MIDI interface, patchbay, or other device to which you want it connected.**
3. **Release the mouse when the device to which you want to connect becomes highlighted.**

   Figure 9.3 shows a simple example of this process.

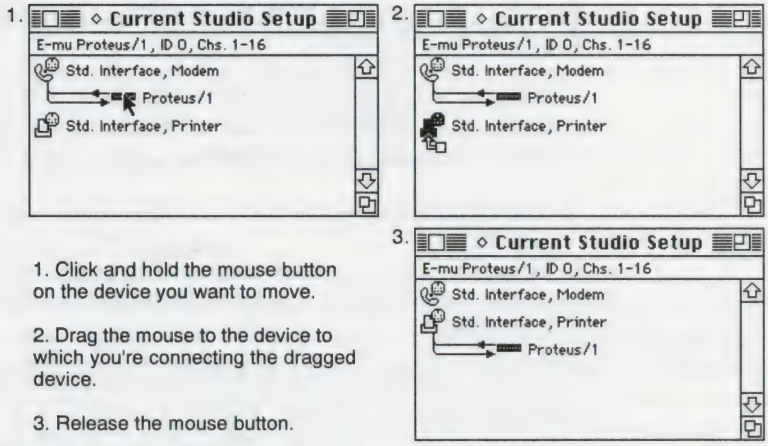
1.
Current Studio Setup
E-mu Proteus/1, ID 0, Chs. 1-16
Std. Interface, Modem
Proteus/1
Std. Interface, Printer
2.
Current Studio Setup
E-mu Proteus/1, ID 0, Chs. 1-16
Std. Interface, Modem
Proteus/1
Std. Interface, Printer
3.
Current Studio Setup
E-mu Proteus/1, ID 0, Chs. 1-16
Std. Interface, Modem
Std. Interface, Printer
Proteus/1
1. Click and hold the mouse button on the device you want to move.
2. Drag the mouse to the device to which you're connecting the dragged device.
3. Release the mouse button.

Figure 9.3: Connecting Devices Manually

Figure 9.4 illustrates some typical device connections.

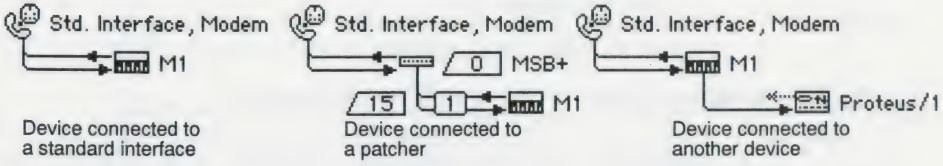

Figure 9.4: Various Device Connections

If you connect devices to a MIDI merger, see "Using an External MIDI Merger" on page 81. If you use MIDI Thruing, refer to "Using MIDI Thru

Ports" on page 82. If you connect devices to a MIDI patchbay, see "Connecting Devices to Patchbays" on page 54 for more information.

You can open a Define Device dialog box for a device by double-clicking the device or patchbay icon. You can edit the name of any device in the Studio Setup document by selecting the name and typing a new name.

Disconnecting Cables

A connected device is represented by a pair of lines running in and out of its left side. These lines represent MIDI cables and the arrows indicate the direction of MIDI data flow.

Your studio may contain some devices that have only one MIDI cable connected to them. You can represent this connection by disconnecting a cable in the Studio Setup document. To do so:

1. **Click a cable's directional arrow to remove that cable from the Studio Setup document.**

   A gray arrow remains beside the device icon, indicating where to click if you want to reconnect that cable. The right-most illustration in Figure 9.4 shows a disconnected cable.

Your studio may also contain some devices that are not connected to anything—they're in your studio, but they're not in use. You can define these devices in a Studio Setup document and still show that they're completely disconnected. To do so:

1. **Click both cables' directional arrows to remove the cables from the Studio Setup document.**

   The MIDI device is disconnected and moves automatically to the top of the Studio Setup document.

Connecting Devices to Patchbays

If there are no MIDI patchbays in your Studio Setup document, you can skip this section. If you are using MIDI patchbays, this section contains additional information on configuring your Studio Setup document.

Figure 9.5 illustrates a typical MIDI patchbay connected to a standard interface and the devices that are connected to the patchbay. It also depicts patchbay terminology used for the rest of this manual.

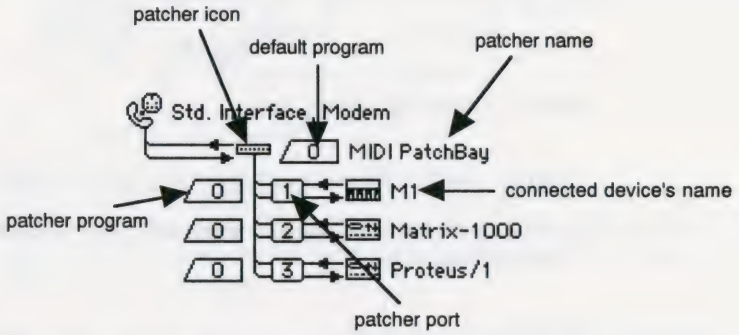

Figure 9.5: Patchbay in a Studio Setup Document

Patcher Default Program

The small quadrangle with the number inside represents the patcher's default program number. The default program is that program used by the patcher whenever it's not routing data from a specific MIDI device to the Macintosh. You need to design a patcher program to be your default program and assign it a program change number. Your patcher's default program allows your OMS applications to send data to any device at any time, so it must:

- Connect the Macintosh output to all MIDI devices connected to the patcher.
- Connect the Macintosh input to the controller keyboard.

See your MIDI patcher manual to learn how to program it and how to assign MIDI program change numbers to MIDI patchbay programs.

Look at Figure 9.6. The M1 synthesizer is the master keyboard controller. The Matrix-1000 and Proteus/1 are rack-mount sound modules. The arrows indicate MIDI cable connections. The lines inside the patcher indicate its default program. Notice that MIDI data from the Mac passes through to all devices and that the M1 sends MIDI data to the Mac.

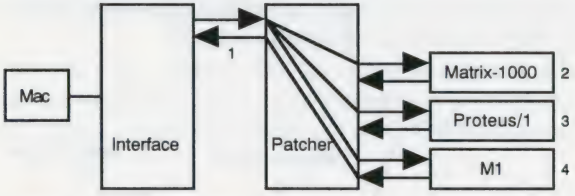

Figure 9.6: Default Program Example

To set the patcher default program number in the Studio Setup document:

1. **Click the number in the quadrangle and type the number of your patcher's default program.**

Patcher Port Assignments

Patchers have ports to which you connect MIDI devices. Port numbers are represented by small, boxed numericals in the MIDI path to each device. You must set the Studio Setup document's port numbers to match each device's patcher port number.

1. **Connect MIDI devices to the patchbay in the Studio Setup document so that they mirror your actual connections (as discussed earlier in this chapter).**
2. **Select the patcher port numerical by clicking it.**

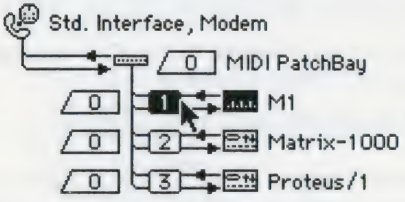

Figure 9.7: Setting a Patcher Port

3. **Type the number of the patcher port to which that MIDI device is connected.**
   You can also set a port by dragging the mouse vertically up and down while holding down the mouse button. Numerical editing is discussed in Appendix A.

NOTE: The numerical range of the patcher port assignment corresponds to the number of MIDI ports entered in the patchbay definition.

NOTE: If you are using different numbered ports on your patcher for MIDI In and MIDI Out of a single device, you will have to use two icons to represent the device. This type of connection is not recommended. See Chapter 12: Special Studio Setup Techniques for more details.

Patcher Program Assignments

Each device that's connected to a MIDI patchbay has a quadrangle to its far left. The numerical inside the quadrangle represents a MIDI program change number. You can ignore this section if your MIDI patchbay does not accept MIDI program changes.

If you want two-way communication between a MIDI device and the Macintosh (such as when transferring patch banks between them), you'll need to program your patchbay so that each MIDI device has a corresponding patchbay program that allows it to send data to and receive data from the Macintosh. See your MIDI patcher manual to learn how to program it and how to assign MIDI program change numbers to MIDI patchbay programs.

Look at Figure 9.8. The arrows indicate MIDI cable connections. The lines inside the patcher indicate a patcher program that sends MIDI data from the Mac to the Matrix-1000 and MIDI data from the Matrix-1000 to the Mac. This would be the patcher program for the Matrix-1000.

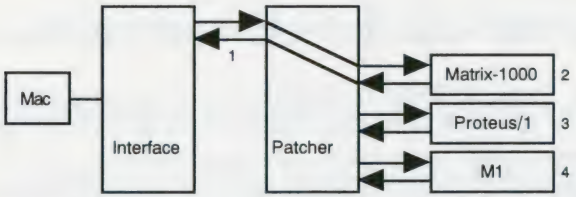

Figure 9.8: Patcher Program Example

To set the patcher program number in the Studio Setup document:

1. **Select the number in the quadrangle by clicking it.**

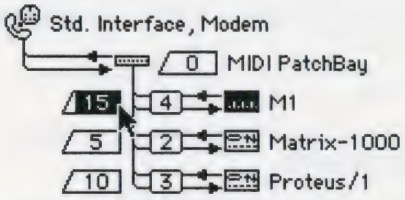

Figure 9.9: Setting a Patcher Program

2. **Enter the patcher program number.**

NOTE: OMS Setup uses the standard MIDI program change number range (0-127). Some patchers observe alternate numbering conventions (1-128 or 11-88). If your patcher uses a patch numbering scheme other than 0-127, see its manual to learn the relationship between its internal patch numbering and standard MIDI program change numbers.

NOTE: Some patchbays receive program changes on only one port—be sure to connect this port to your MIDI interface.

❑ Connecting Devices to Multi-Port Interfaces

The Studio 4, Studio 5 and MIDI Time Piece are multi-port MIDI interfaces with built-in MIDI routing abilities—they have numerous ports to which you connect MIDI devices, and can be networked for even more MIDI port pairs. Figure 9.10 illustrates a Studio Setup document containing a Studio 5 and eight MIDI devices.

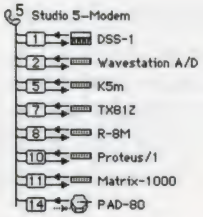

Figure 9.10: Studio 5 with Devices Connected

Port numbers for a multi-port interface are represented by small, boxed numericals in the MIDI path to each device. You must set the Studio Setup document's port numbers to match each device's multi-port interface number.

1. **Select a port number by clicking it.**

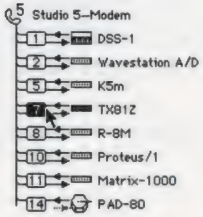

Figure 9.11: Selecting a Port Number

2. **Type the number of the port pair to which that MIDI device is connected.**
   You can also set a port by dragging the mouse vertically up and down while holding down the mouse button. Numerical editing is discussed in Appendix A.

Multi-Port Interfaces and OMS-Compatible Applications

In general, if you choose a multi-port interface as a MIDI data source within an OMS-compatible application, only data generated by that interface (not data from the attached devices) is sent to the Macintosh. If the application needs to receive data from an attached device, you should choose that device as a MIDI data source within the OMS-compatible application.Specifically:

- **Studio 4**: In OMS-compatible applications, if you choose the Studio 4 as a MIDI data source, only timecode from the Studio 4 and MIDI beat clock from any devices connected to the Studio 4 are sent to the application—other types of MIDI data from devices attached to the Studio 4

are not sent. Select devices by name (rather than selecting the interface) if you want to use them as MIDI sources.

- **Studio 5**: In OMS-compatible applications, if you choose the Studio 5 as a MIDI data source, only data generated by the Studio 5 (timecode, footswitches and audio events) is sent to the application—other types of MIDI data from devices attached to the Studio 5 are not sent. Select devices by name (rather than selecting the interface) if you want to use them as MIDI sources.
- **MTP**: In OMS-compatible applications, if you choose the MIDI Time Piece as a MIDI source, only timecode from the MTP and MIDI beat clock from any devices connected to the MTP are sent to the application—other types of MIDI data from devices attached to the MTP are not sent. Select devices by name (rather than selecting the MTP) if you want to use them as MIDI sources.

NOTE: For further details about using the Studio 4 or Studio 5 with OMS, see their respective manuals. For additional information about the MIDI Time Piece, see "MIDI Time Piece Network Configurations" on page 88.

Examples

At this point in the tutorial, the simple MIDI studio example shown in Figure 4.1 on page 24 would have the Studio Setup document shown in Figure 9.12.

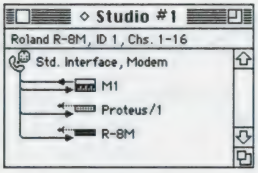

Figure 9.12: Complete Studio Setup Document for Figure 4.1

Similarly, the studio shown in Figure 4.2 on page 25 would have the Studio Setup document shown in Figure 9.13, and the studio shown in Figure 4.3 on page 26 would have Studio Setup document shown in Figure 9.14.

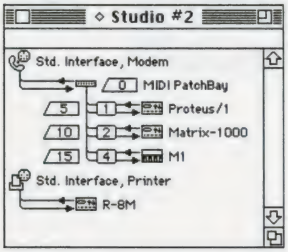

Figure 9.13: Complete Studio Setup Document for Figure 4.2

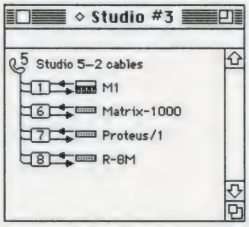

Figure 9.14: Complete Studio Setup Document for Figure 4.3

CHAPTER 10: Testing your Studio Setup Document

OMS Setup provides a test mode to check the accuracy of your Studio Setup document.

❑ Entering Test Mode

1. **Choose Open Current Studio Setup from the File menu if your current Studio Setup document is not active.**
2. **Choose Test Studio from the Studio menu.**

   The Test Studio command toggles test mode on and off. When test mode is active, Test Studio will have a check next to it in the Studio menu. Also, the cursor in the Studio setup document will change to an eighth note when it's over a MIDI device, patcher or interface icon.

❑ Testing Mac-to-Device Connections

You can test the flow of MIDI data from the Macintosh into each of the MIDI devices.

1. **Click a MIDI device icon with the note cursor.**

   This sends random notes to the device on the MIDI channels to which the device listens. To make sure the notes are audible, a MIDI volume message sets every channel's volume to 127. Listen for a cacophony of notes (or watch for MIDI indicating LED's) when you click a device icon.

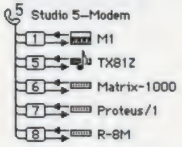

Figure 10.1: Testing MIDI Device Inputs

If you're using a patcher, clicking the device icon also sends the appropriate two-way communication patcher program. This program change message is sent only in Test Studio mode. Clicking the patcher icon recalls the patcher's default program.

❑ Testing Device-to-Mac Connections

To test MIDI data flow from MIDI devices into the Macintosh, each device must be able to generate MIDI data. On controller instruments just strike a key, pluck a string or hit a pad. When the Macintosh receives the MIDI data, a voice from the Macintosh says "MIDI received" and the line that represents the MIDI cable in the Studio Setup document flashes. The "MIDI received" message will not re-trigger more than once every five seconds, but the flashing line will continue to indicate data arrival.

NOTE: If your Studio Setup contains MIDI merging (multiple sources into one port), the wrong arrow may flash when testing MIDI connections from devices to the Macintosh. When MIDI comes in from any of those sources, only one of them is going to flash, and it won't necessarily be the one that really sent the data.

For devices that have no keyboard, the best way to test MIDI data flow to the Macintosh is to initiate a bulk dump from that MIDI device.

❑ Leaving Test Mode

1. **Choose Test Studio from the Studio menu to turn-off OMS Setup's test mode.**

CHAPTER 11: Using OMS with MIDI Manager

Now that you've configured and tested your Studio Setup document, you're ready to begin using OMS. OMS works seamlessly in the background of OMS-compatible applications routing MIDI to and from devices and providing studio setup information to MIDI applications.

Only one thing stands between you and a completed tutorial: MIDI Manager. OMS can be either an alternative to MIDI Manager or an addition. The first part of this chapter will help you decide if you need MIDI Manager. If you find you'll be using MIDI Manager, read the remainder of the chapter for a tutorial.

❑ Understanding OMS and MIDI Manager

The following sections discuss the purpose of MIDI Manager—why you might want to use it with OMS and why you might not. This information will help you decide if you need MIDI Manager.

What is MIDI Manager?

MIDI Manager is a system extension developed by Apple. It provides a driver for a standard MIDI Interface and a framework for other third-party drivers. It also allows multiple MIDI applications to run simultaneously and share Macintosh serial ports and timing capabilities.

You use a program called "PatchBay" to route data between MIDI applications, or between applications and drivers (like the Apple MIDI driver or the OMS MIDI Manager Driver).

One of the primary disadvantages of the MIDI Manager is that it uses a lot of your Macintosh's computing power—slowing many computer operations and sometimes causing timing problems.

NOTE: It is not recommended that you use the MIDI Manager on a Macintosh Plus, SE or Classic.

Why Use MIDI Manager With OMS?

The following is a list of reasons you might want to use MIDI Manager with OMS:

- If you use software that's not OMS-compatible and that requires MIDI Manager to operate, you'll need to use MIDI Manager.
- If you're using an OMS-compatible application and need to drive MIDI hardware that has a MIDI Manager driver but no OMS driver, you'll need to use MIDI Manager.
- If you need to route data between MIDI applications, you'll need to use MIDI Manager (for example, using Vision to control playback of Track Chart's Time Line).
- If you need to run multiple applications with simultaneous and precise timing (for example, Max and Vision together), you'll need to use MIDI Manager.

If you decide to use OMS with MIDI Manager, you should continue reading this chapter. Otherwise you're finished with the tutorial and may proceed to "Part 3: OMS Reference".

❑ Installing MIDI Manager

MIDI Manager is *not* installed automatically when you install OMS. Therefore, you will need to perform a custom installation if you plan to use MIDI Manager. Run the Installer, click the Customize button, choose to install only MIDI Manager and restart your computer. MIDI Manager files will be placed

in their proper locations. See Chapter 2: Software Installation & Definitions for additional information about MIDI Manager files.

❑ OMS Drivers vs. MIDI Manager Drivers

Both Apple's MIDI Manager and OMS use software called "drivers" to access specific MIDI interfaces, devices, or NuBus cards.

OMS drivers are discussed in Chapter 2: Software Installation & Definitions and are kept in the System Folder in a special folder named "OMS Folder".

MIDI Manager drivers are kept in the System Folder:

- The Apple MIDI Driver is a standard MIDI interface driver and is supplied with MIDI Manager.
- The OMS MIDI Manager Driver acts as a "bridge" between MIDI Manager applications and dedicated OMS drivers. It's supplied with OMS and is a replacement for the Apple MIDI Driver.

Some hardware manufacturers supply other MIDI Manager drivers with their products.

Disabling the Apple MIDI Driver

The OMS MIDI Manager driver duplicates and exceeds the functions of the Apple MIDI driver. When you use OMS with MIDI Manager, you use the OMS MIDI Manager driver instead of the Apple MIDI driver. Therefore, you must either disable the Apple MIDI driver or remove it from your system folder.

To disable the Apple MIDI driver:

1. **Double-click the PatchBay application to start the PatchBay application.**
2. **Double-click the Apple MIDI driver icon to open its edit window.**
3. **Uncheck both the modem and serial ports in the Apple MIDI driver edit window.**
4. **Close the Apple MIDI driver edit window.**
   The Apple MIDI driver is disabled.

If you'll never use the Apple MIDI driver, you can remove it from your System Folder. When it's removed from the System Folder, it's disabled and its icon will not appear in MIDI Manager's PatchBay application.

Using OMS Drivers

If you are using the OMS SampleCell driver, you should remove the SampleCell MIDI Manager driver from your system folder unless you wish to connect MIDI Manager-only applications to SampleCell while OMS is running. If so, you may use both drivers together, but keep in mind that OMS and MIDI Manager cannot send data to SampleCell at the exact same time—if you try this, some MIDI messages may be ignored.

If you use the OMS MacProteus driver and Digidesign's MacProteus Front Panel application, you must continue to use the MacProteus MIDI Manager driver. These drivers are compatible and may be used together *if* you don't attempt to send data to the MacProteus from both OMS and MIDI Manager simultaneously—if you try this, some MIDI messages may be ignored. If, instead of Digidesign's Front Panel application, you are using Opcode's Galaxy Plus Editors to control your MacProteus, you *must* remove Digidesign's MacProteus MIDI Manager driver from your System Folder. Only when you do this will the MacProteus OMS driver receive MIDI from the card and route it to Galaxy.

Generally speaking, if you are using an OMS driver for some device, disable any MIDI Manager driver that device may have.

❑ OMS/MIDI Manager Interaction

With MIDI Manager, you can use OMS-compatible applications and MIDI Manager-compatible/OMS-incompatible applications together. When you launch a MIDI Manager application, OMS will put OMS into "Use Apple MIDI Manager" mode automatically.

Follow through the numbered paragraphs in the PatchBay document shown in Figure 11.1. This will help you to understand the way that OMS and MIDI Manager work together. If you've never used PatchBay or MIDI Manager, you should either read your MIDI Manager documentation or study its on-line help.

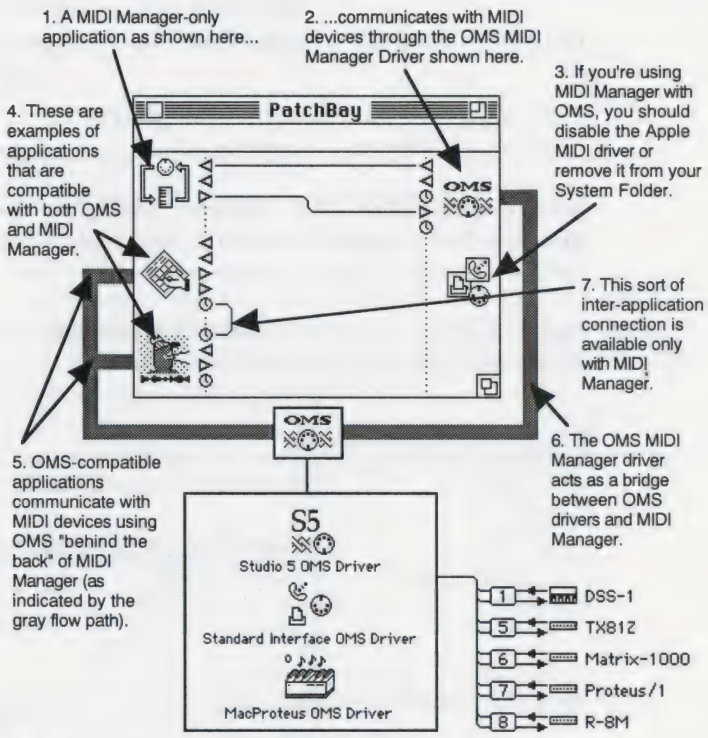
1. A MIDI Manager-only application as shown here...
2. ...communicates with MIDI devices through the OMS MIDI Manager Driver shown here.
3. If you're using MIDI Manager with OMS, you should disable the Apple MIDI driver or remove it from your System Folder.
4. These are examples of applications that are compatible with both OMS and MIDI Manager.
PatchBay
OMS
7. This sort of inter-application connection is available only with MIDI Manager.
6. The OMS MIDI Manager driver acts as a bridge between OMS drivers and MIDI Manager.
5. OMS-compatible applications communicate with MIDI devices using OMS "behind the back" of MIDI Manager (as indicated by the gray flow path).
S5
Studio 5 OMS Driver
Standard Interface OMS Driver
MacProteus OMS Driver
1 DSS-1
5 TX81Z
6 Matrix-1000
7 Proteus/1
8 R-8M

Figure 11.1: OMS and MIDI Manager Interaction

When using OMS in the "Use Apple MIDI Manager" mode, it is unnecessary to connect OMS-compatible applications to the OMS MIDI Manager driver. These connections are made "behind MIDI Manager's back" by OMS. OMS-compatible applications have MIDI Manager ports to communicate with one another and with other MIDI Manager applications.

NOTE: If you're using MIDI Manager with OMS, you must use MIDI Manager version 2.0.1 or higher. The latest version will always be installed when you use the latest installer.

Using MIDI Manager—An Example

This section starts with a sample Studio Setup document and shows you how to:

- Configure the OMS MIDI Manager driver.
- Connect OMS to a MIDI Manager application in PatchBay.

Even though the Studio Setup document used in this tutorial will not match your own, follow through the examples and apply the techniques to your own OMS MIDI Manager driver and PatchBay application.

Figure 11.2 shows the sample Studio Setup document used for this tutorial. Your Studio Setup document will look different.

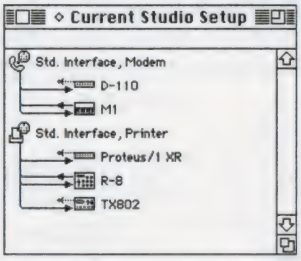

Figure 11.2: Current Studio Setup Document

In this sample Studio Setup document, all devices are connected to the ports of a standard MIDI interface. The M1 and R8 are controllers with on-board sequencers that send and receive sync (MIDI clock). The D-110, Proteus/1 XR and TX802 are multitimbral sound modules.

Opening the OMS MIDI Manager Driver Setup Window

1. **Launch the PatchBay application.**
   PatchBay opens and is empty except for the OMS MIDI Manager driver as shown in Figure 11.3.

Figure 11.3: OMS MIDI Manager Driver in PatchBay

NOTE: This tutorial assumes you have removed the Apple MIDI driver from your System Folder; If you haven't, the Apple MIDI driver will appear in the PatchBay window. Disable it by double-clicking its icon and unchecking both serial ports.

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2. **Double-click the OMS MIDI Manager driver icon to open the OMS MIDI Manager driver setup window.**

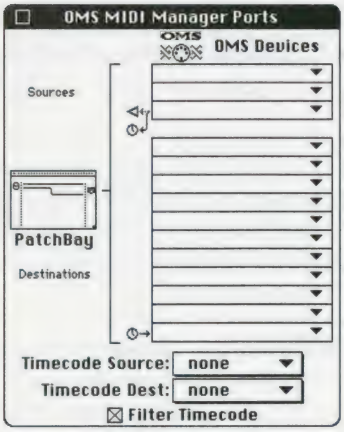


Figure 11.4: OMS MIDI Manager Driver Setup Window

Look at Figure 11.4. Notice that the OMS MIDI Manager driver contains pop-up menus for choosing up to three OMS sources and eleven OMS destinations. It also contains pop-up menus for choosing timecode source and destination formats, and a check box for filtering timecode. The following section discusses each of these items.

Configuring the OMS MIDI Manager Driver Setup Window

Before you can use MIDI Manager, you have to "tell" the OMS MIDI Manager driver about your studio. Most of the information is contained in your Studio Setup document—all you have to do is reference it in your OMS MIDI Manager driver setup window. In this section, you'll configure your OMS MIDI Manager Driver to work with MIDI Manager and OMS.

Source Ports

Source ports provide MIDI and timing data to MIDI Manager. OMS sends your source selections to PatchBay where you connect them to other MIDI Manager applications or drivers.

Use the first three pop-up menus in the OMS MIDI Manager driver setup window to select OMS devices as MIDI sources for MIDI Manager. A source appears in PatchBay as a small triangle pointing away from the OMS MIDI Manager driver. You can select as many MIDI devices per source as you want. Each selected device has a check mark next to its name in the menu. To select a device as a MIDI Manager source, choose its name from a pop-up menu. To de-select a device as a MIDI Manager source, choose its name again from the pop-up menu.

The first two pop-up source menus list every device in your Studio Setup document that you defined as a controller. When you select a device from this pop-up menu, a small triangle appears to its left to indicate that you have created a new MIDI Manager port. The new port takes its name from the list of devices chosen in the pop-up menu. Pop-up menus with no device selection will not create a MIDI Manager port in PatchBay.

Use the third pop-up source menu to select OMS devices as sync sources for MIDI Manager. This pop-up menu lists those devices in your current Studio Setup document that you defined as sending sync. Devices chosen in this pop-up menu supply timecode or MIDI beat clock to the OMS MIDI Manager driver's top clock icon in PatchBay in the format specified by the Timecode Source pop-up menu (if Filter Timecode is checked). See the section titled "Sync" on page 75 for more information.

Look at the Studio Setup document shown in Figure 11.2 on page 70. The M1 and R-8 are both defined as controllers and they both send sync. Therefore, both of these devices appear in all three pop-up source menus.

1. **Click the first Sources pop-up menu and select the M1 from the list of available devices.**
2. **Click the third Sources pop-up menu and select the R-8 from the list of available devices.**

Figure 11.5 illustrates properly configured MIDI source ports.

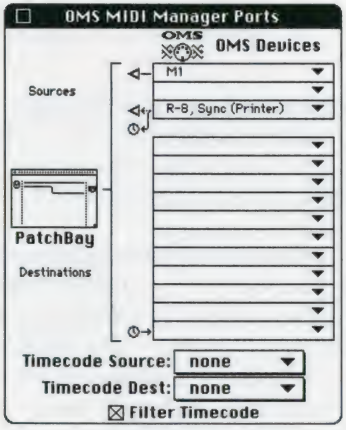


Figure 11.5: OMS MIDI Manager Source Port Configuration

STUDIO 4 NOTE: If you choose the Studio 4 as a MIDI source, only timecode from the Studio 4 and MIDI beat clock from any devices connected to the Studio 4 are sent to the Macintosh—other types of MIDI data from devices attached to the Studio 4 are not sent out the source port. Select devices by name (rather than selecting the interface) if you want to use them as MIDI Manager sources.

STUDIO 5 NOTE: If you choose the Studio 5 as a MIDI source, only data generated by the Studio 5 (timecode, footswitches and audio events) is sent to the Macintosh—other types of MIDI data from devices attached to the Studio 5 are not sent out the source port. Select devices by name (rather than selecting the interface) if you want to use them as MIDI Manager sources.

MIDI TIME PIECE NOTE: If you choose the MIDI Time Piece as a MIDI source, only timecode from the MTP and MIDI beat clock from any devices connected to the MTP are sent to the Macintosh—other types of MIDI data from devices attached to the MTP are not sent out the source port. Select devices by name (rather than selecting the MTP) if you want to use them as MIDI Manager sources.

Destination Ports

Destination ports receive MIDI and timing data from MIDI Manager. OMS receives data from any MIDI Manager applications or drivers connected to an OMS MIDI Manager destination port in PatchBay.

Use the eleven pop-up menus below the source port menus to configure the destination ports. Destination ports are identified by the names of the devices assigned to them. A destination appears in PatchBay as a small triangle pointing toward the OMS MIDI Manager driver. You can select as many MIDI devices (or groups of devices) per destination as you want. Each selected device has a check mark next to its name in the menu. To select a device as a MIDI Manager destination, choose its name from a pop-up menu. To de-select a device as a MIDI Manager destination, choose its name again from the pop-up menu.

Pop-up destination menus show only those devices in your current Studio Setup document that you defined as receiving MIDI data. When you select a device (or group of devices) from this pop-up menu, a small triangle appears to its left to indicate that you have created a new MIDI Manager port. Pop-up menus with no device selection will not create a MIDI Manager port in PatchBay.

Use the eleventh pop-up destination menu to select OMS devices as MIDI Manager sync destinations. This pop-up menu lists only those devices in your current Studio Setup document that you defined as receiving sync. Devices chosen in this pop-up menu receive timecode from the OMS MIDI Manager driver's lower clock icon in PatchBay in the format specified by the **Timecode Dest** pop-up menu. See the sectioned titled "Sync" on page 75 for more information.

Look at the Studio Setup document shown in Figure 11.2 on page 70. The M1 and D-110 both receive MIDI data from the Macintosh Modem port. The Proteus/1 XR, R-8, and TX802 all receive MIDI data from the Macintosh Printer

port. Since this is a standard MIDI interface, devices are grouped by the serial port to which they're assigned.

1. **Click the first Destinations pop-up menu and choose the list of devices that are merged into the Modem port (the D-110 and M1).**
2. **Click the next Destinations pop-up menu and choose the list of devices that are merged into the Printer port (the Proteus, R-8 and TX802).**

Figure 11.6 illustrates properly configured MIDI destination ports.

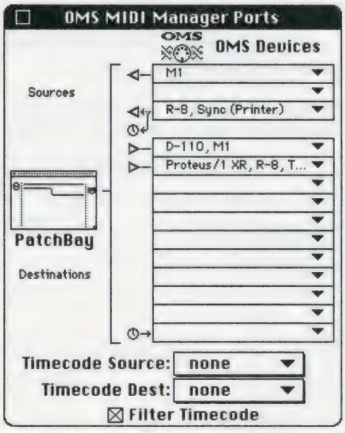


Figure 11.6: OMS MIDI Manager Destination Port Configuration

Sync

Three separate selections make up the sync portion of the OMS MIDI Manager driver setup window. These are the **Timecode Source** pop-up menu, the **Timecode Dest** pop-up menu, and the **Filter Timecode** check box.

Use the **Timecode Source** pop-up menu to select the timecode format sent to the MIDI source port. Use the **Timecode Dest** pop-up menu to select the timecode format received at the MIDI destination sync port.

NOTE: You must use MIDI Manager version 2.0.1 or later for the Timecode Dest pop-up menu to work properly.

If you check the **Filter Timecode** check box, the selected sync format (MIDI beat clock or a timecode format) is routed to the timecode sync port (the little

clock icon). Anything else received from the selected sync port source(s) is routed to the unfiltered sync port (the little triangle).

If you uncheck the **Filter Timecode** check box, then timecode and any other MIDI data coming from the device (or devices) chosen in the pop-up sync port menu is sent out the unfiltered sync port (the little triangle). Nothing is sent out the timecode sync port (the little clock icon).

Look at the Studio Setup document shown in Figure 11.2 on page 70. Assume you want to use the M1 as a MIDI controller and the R-8 as a timecode source. The R-8 outputs MIDI beat clocks, so you would select "beats" from both timecode pop-up menus, and check the **Filter Timecode** check box to send R-8 timing information to the source sync port.

Figure 11.7 illustrates a properly configured OMS MIDI Manager driver setup window.

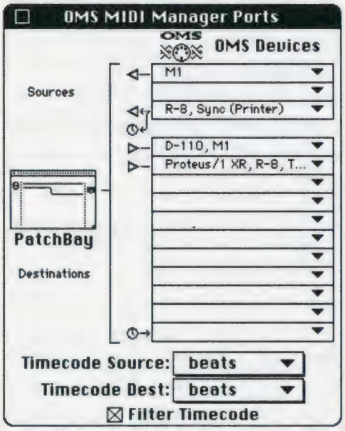


Figure 11.7: A Configured OMS MIDI Manager Driver

The OMS MIDI Manager Driver's OMS Menu

The OMS menu is accessible while the OMS MIDI Manager driver setup window is open.

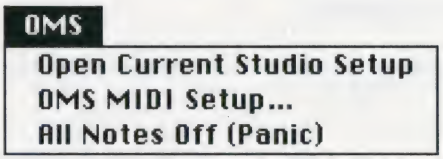


Figure 11.8: OMS Menu

Open Current Studio Setup opens your current Studio Setup document.

OMS MIDI Setup opens the standard OMS MIDI Setup dialog box, which is explained in more detail in Chapter 13: OMS Setup Menus. When you run a MIDI Manager application (such as PatchBay), this selection will automatically be set to "Use Apple MIDI Manager" mode (if the OMS MIDI Manager driver is in your System Folder).

All Notes Off sends note off messages on all MIDI channels to all MIDI devices.

OMS MIDI Manager Ports in PatchBay

So far, in this section, you configured the OMS MIDI Manager driver to create

- a source port that will route MIDI data from the M1 into PatchBay.
- a sync source that will route timecode from the R-8 into PatchBay.
- two destination ports that route MIDI from PatchBay to other OMS devices.

  One destination port routes MIDI to the M1 and D-110; the other routes MIDI to the Proteus/1 XR, R-8, and TX802.

1. **Launch a non-OMS MIDI Manager application**
   This example shows a fictional sequencer named "S".
2. **Activate the PatchBay window.**
3. **Connect the top port of the OMS MIDI Manager driver (which is the output of the M1) into the sequencer's input port.**
4. **Connect the sync source (which is timecode from the R-8) to the sequencer's sync input.**

5. **Connect the sequencer's two output ports to the two OMS MIDI Manager destination ports.**

Figure 11.9 illustrates a properly configured PatchBay application.

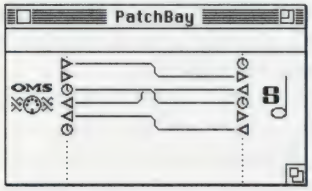


Figure 11.9: PatchBay Connected to Sequencer S

NOTE: You should never turn MIDI Manager off from within a non-OMS applications when an OMS application is running—interface communication problems could result. If you do this by accident, open the OMS MIDI Setup dialog and simply click OK.

PART 3: OMS Reference

CHAPTER 12: Special Studio Setup Techniques

This chapter discusses special device connections, patcher configurations, Studio Setup editing methods and MIDI Time Piece networks.

❑ Using an External MIDI Merger

Standard MIDI interfaces have only one MIDI input connector per Macintosh serial port. A simple studio without a MIDI patchbay can have only one device's MIDI output plugged into each standard interface's MIDI input. This is represented in Figure 12.1. Notice that the M1 sends and receives data, but that the Proteus only receives MIDI data.

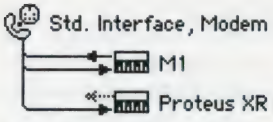


Figure 12.1: No Merging

MIDI merging occurs when two or more independent MIDI data streams are combined into one. If you're using an external MIDI merger, the device will not appear in the Studio Setup document, but you can represent its function: simply connect the MIDI outputs from all merged devices to the standard MIDI interface as shown in Figure 12.2.

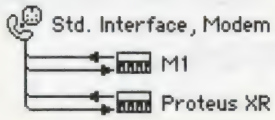


Figure 12.2: Merging MIDI Ins

Notice that both the M1 and the Proteus can send MIDI data to the Macintosh Modem port. The MIDI Merger does not appear, but its function is represented.

Using MIDI Thru Ports

Some devices have MIDI Thru ports that pass along data received by the device's MIDI In port. In a Studio Setup document, you may consider MIDI Thru ports as additional MIDI sources. Figure 12.3 shows a device connected to another device's MIDI Thru port and the correct Studio Setup representation.

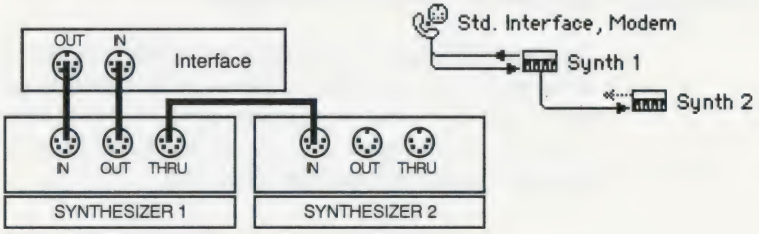


Figure 12.3: Correct MIDI Thru Connection

Figure 12.4 shows an alternate MIDI Thru connection in which Synth 2's MIDI Out is connected to the interface. Notice that the correct Studio Setup document deviates from reality by showing Synth 2 connected to the interface and Synth 1 to the Thru port.

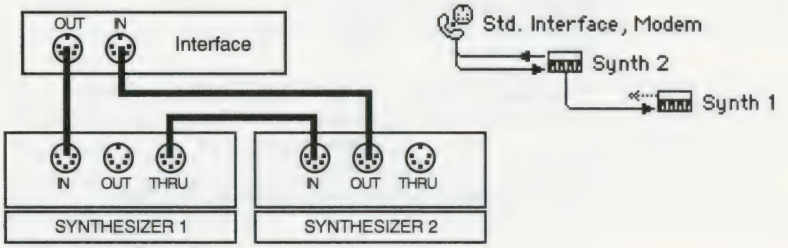


Figure 12.4: Alternate MIDI Thru Connection

Figure 12.5 illustrates an improper MIDI Thru connection because you cannot connect an output from Synth 2 back to Synth 1 in a MIDI Thru connection.

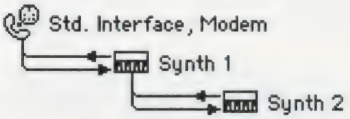


Figure 12.5: Incorrect MIDI Thru Connection

The connection shown in Figure 12.5 is possible only if Synth 1 has multiple MIDI Inputs or if you use a merger. If your intention is to represent a MIDI Thru, then Figure 12.5 represents an incorrect connection.

❑ Sharing One Device Between Two Ports

In some rare instances, you may have a single MIDI device connected to both the Modem and Printer port MIDI connectors on a standard two-port MIDI interface. In this instance, you will have to use two devices to depict this connection in the Studio Setup document.

Assume, for example, that you have a device's MIDI Out connected to the modem MIDI In and the device's MIDI In connected to a Printer MIDI Out. You represent that connection as shown in Figure 12.6.

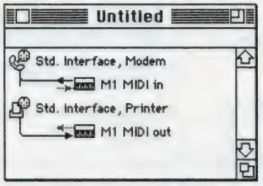


Figure 12.6: Sharing One Device Between Two Ports

This Studio Setup document defines a single M1 using two device icons. The definitions are the same since it's the same instrument; only the names are different (OMS Setup does not allow duplicate names). If you have a device connected this way, you should try to connect both the MIDI In and Out to the same side (Modem or Printer) of the interface. If this is impossible, create the configuration described above—it's not the recommended way of connecting devices, but it is possible.

IMPORTANT: Devices connected to the Macintosh this way will not transfer patches with editor/librarian software. Connect a device's MIDI In and Out ports to the same side (Modem or Printer) of the interface for patch transfers.

❑ Sharing a Patcher Between Two Ports

It's conceivable that your MIDI studio could contain a single patcher with MIDI connections to both the Modem port and Printer port interfaces. If your studio is set up this way, your Studio Setup document will need to show two patchers.

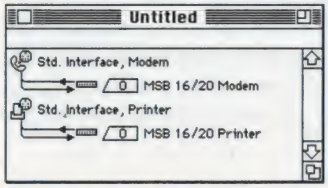


Figure 12.7: One Patcher Defined as Two

When you add MIDI devices to the Studio Setup document shown in Figure 12.7, your choice of the patchbay to which you connect a device determines which of the two ports OMS will use to communicate with that device.

Since most MIDI patchbays receive program changes on only one of their MIDI IN ports, you'll need to specify which Macintosh port receives patcher program changes. Double-click the patcher icon to open the MIDI Device Info dialog, and use the "Send program changes to" pop-up menu to choose a patcher. See "Send Program Changes To (Patchers Only)" on page 109 for more information.

Non-Standard Use of Patchers

In a standard patcher connection, you connect the MIDI inputs and outputs of your MIDI devices to MIDI port pairs on your patcher. Patcher/device connections that deviate from this scheme are called "non-standard".

One possible non-standard patcher connection is shown in Figure 12.8. Outputs from MIDI devices connect to the patcher, but inputs to MIDI devices connect to the standard interface. Figure 12.8 shows, on the left, an actual non-standard patcher cable routing setup and, on the right, how such a routing looks in a Studio Setup document.

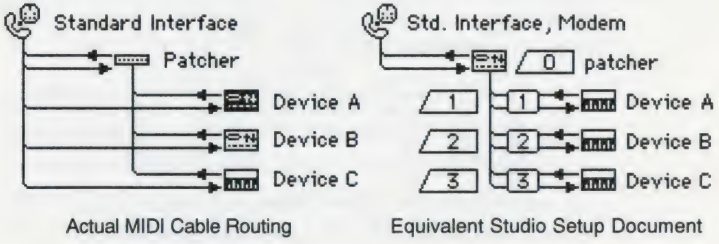


Figure 12.8: Non-Standard Patcher Setup

Even though the patcher wiring is as shown on the left, you must indicate it as shown in the Studio Setup document on the right. The Studio Setup document reflects the way the non-standard patcher setup works, it just doesn't reflect accurate cabling. In Figure 12.8, you send program changes to the patcher, routing MIDI to the Macintosh from a particular device. Every device is always available for output from the Macintosh. Although the MIDI output from the Macintosh to the devices does not run through the patcher, you must

represent it as if it does because OMS Setup always deals with MIDI connections in pairs (1 input, 1 output).

Adding or Removing Cards and Interfaces from a Studio Setup Document

If you change the hardware connected directly to your Macintosh (MIDI interfaces, NuBus cards), choose the **Interfaces** command from the **Studio** menu, click the **Update Setup** button, select the port(s) to search, and click the **Search** button. The Macintosh searches its internal card slots and the selected serial ports for hardware. Any new cards or interfaces are added to your Studio Setup document. Cards or interfaces that are no longer connected disappear and the devices connected to those interfaces become unconnected.

When You Have More Devices than MIDI Ports

In the modern MIDI studio, it's easy to run out of MIDI ports before your run out of devices.

If you find yourself faced with this situation, you have numerous options. The first thing you need to do is determine which devices require two-way communication with the Macintosh. If a device needs to both send and receive MIDI data, then you need to connect both its MIDI In and MIDI Out ports to an interface. Examples include:

- Devices used as controllers as well as sound modules.
- Devices used as sync sources as well as sound modules.
- Devices with which you need to send and receive system exclusive data. Some devices require two-way (or "handshaking") communication just to receive a patch or bank dump via system exclusive.

Frequently, you'll find many devices in your studio that don't need two-way communication. MIDI effects and many rack-mount synthesizer modules often require only one-way communication in a sequencing environment. You can chain these devices together via their MIDI Thru ports as shown in Figure 12.9. For more information on using MIDI Thru ports, see "Using MIDI Thru Ports" on page 82.

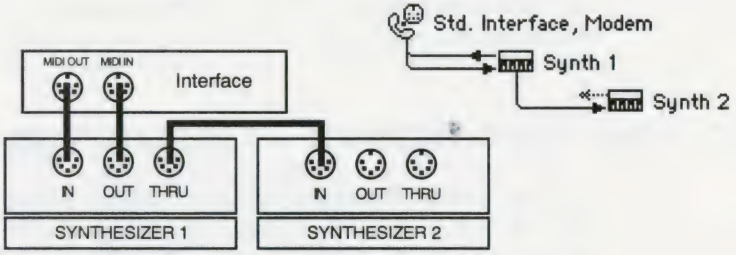


Figure 12.9: Typical MIDI Thru and Studio Setup Document

If, after chaining together any devices that don't require two-way communication, you find you still have more devices than MIDI ports, you may wish to use a MIDI merger. MIDI mergers combine two device outputs into one. You could connect a second device to the first via the MIDI Thru port, then merge both device outputs into the interface's single MIDI input as shown in Figure 12.10. For more information on using MIDI mergers, see "Using an External MIDI Merger" on page 81.

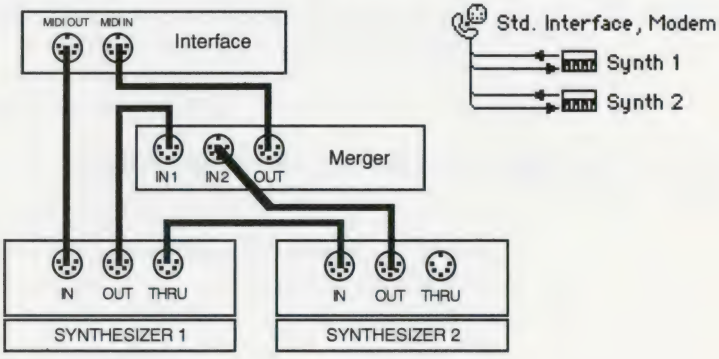


Figure 12.10: Typical MIDI Thru w/Merger and Studio Setup Document

If you own a MIDI patcher, simply connect it to one of your interface's MIDI port pairs and connect all your extra device MIDI Ins and MIDI Outs to the patcher. MIDI patchers are discussed throughout this manual.

If you're using a standard MIDI interface and find yourself tangled in a mess of MIDI mergers and thru connections, you should consider upgrading to a multi-port interface.

If you're already using a multi-port interface (such as a Studio 4 or Studio 5), and if finances allow, you should seriously consider purchasing additional interfaces since you can network them to create more MIDI port pairs.

❑ MIDI Time Piece Network Configurations

OMS has a MIDI Time Piece driver that allows OMS applications to use the MIDI Time Piece's fast mode and cable routing abilities. For the MIDI Time Piece to function, the MIDI Time Piece must be configured properly using the MIDI Time Piece DA, and your MIDI devices must be properly connected in the Studio Setup document. Make sure you consult the MIDI Time Piece manual for details on using the MIDI Time Piece Desk Accessory.

The following sections discuss varying configurations; read the one that applies to your setup.

IMPORTANT: When using the MIDI Time Piece DA with an OMS application, you must set the OMS compatibility mode (as set in the OMS MIDI Setup dialog box) to "Allow non-OMS Applications". If you do not do this you will get a warning such as "There is a MIDI Transmission error..." or "Port in use...".

One MIDI Time Piece With One Cable

If your MIDI Time Piece DA's network configuration looks like the left half of Figure 12.11, then the MTP interface appears in your Studio Setup document as shown in the right half.

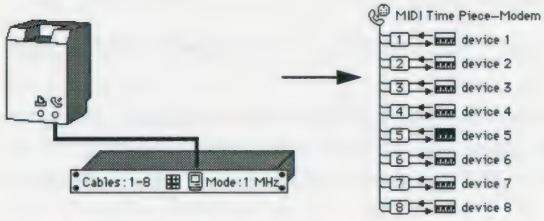


Figure 12.11: One MTP on One Serial Port

You don't have to enter a device for each of the MIDI Time Piece ports (like in this example); only for the ports to which you have connected devices.

You should set your cable routing to look as shown in Figure 12.12:

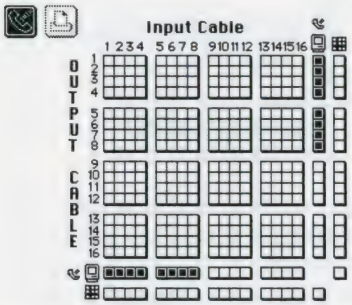


Figure 12.12: Cable Routing for Figure 12.11

This routing is necessary for the MIDI information to get into the Macintosh and for MIDI information from Macintosh applications that don't work with the MIDI Time Piece to get all 8 cables. The Macintosh is routed to cables 1 through 8. Any other routing in this grid is up to your own personal needs.

One MIDI Time Piece on Each Mac Port

If your MIDI Time Piece DA's network configuration looks like the left half of Figure 12.13, then the MTP interfaces appear in your Studio Setup document as shown in the right half.

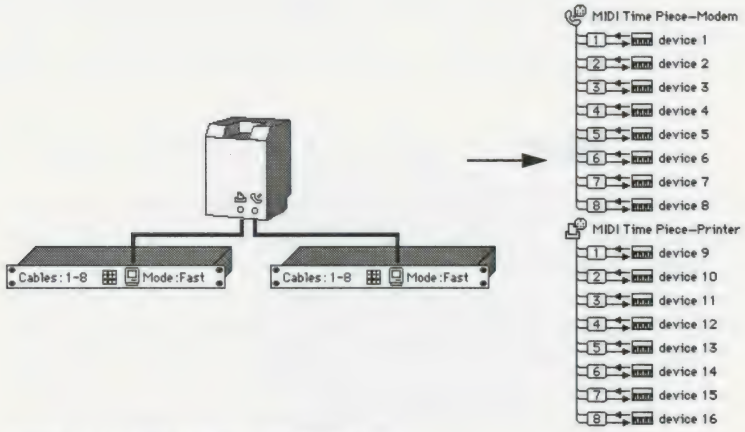


Figure 12.13: One MTP on Each Serial Port

This configuration shows two individual MIDI Time Pieces connected to the Macintosh; no networking is taking place.

Click the Modem and Printer buttons in the top left corner of the routing grid and set the routing matrix for both Macintosh ports as shown in the first example. In this configuration, both MIDI Time Pieces must be set to use cables 1 through 8. If a MIDI Time Piece connected directly to the Macintosh serial port is set to 9 through 16, it will not be recognized by OMS Setup.

You don't have to enter a device for each of the MIDI Time Piece ports (like in this example); only for the ports to which you have connected devices.

One MIDI Time Piece With Two Cables

If your MIDI Time Piece DA's network configuration looks like the left half of Figure 12.14, then the MTP interface appears in your Studio Setup document as shown in the right half.

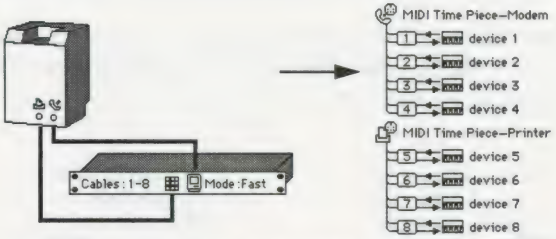


Figure 12.14: One MTP on Two Serial Ports

The single MIDI Time Piece appears as two icons in the Studio Setup document. This may at first seem odd, but it allows you to balance the MIDI data stream by choosing the serial port with which each device communicates. Devices connected to "MIDI Time Piece—Modem" communicate with the Macintosh Modem port and need to be set that way in the MIDI Time Piece DA cable routing grid. Devices connected to "MIDI Time Piece—Printer" communicate with the Macintosh Printer port and also need to be set in the routing grid.

For the Studio Setup document shown in Figure 12.14, your cable routing grid should look like Figure 12.15.

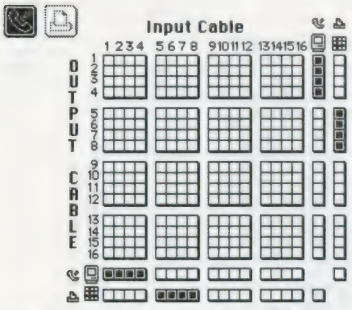


Figure 12.15: Cable Routing for Figure 12.14

If you connect devices in some way other than four per serial port, you'll need to set the cable routing grid to match your Studio Setup document. You don't have to enter a device for each of the MIDI Time Piece ports (like in this example); only for the ports to which you have connected devices.

Two MIDI Time Pieces Networked With Two Cables

If your MIDI Time Piece DA's network configuration looks like the left half of Figure 12.16, then the MTP interface appears in your Studio Setup document as shown in the right half.

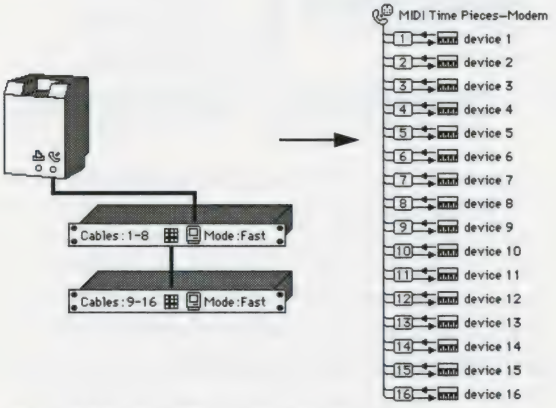


Figure 12.16: Two MTP's on One Networked Port

You should set your cable routing to look as shown in Figure 12.17:

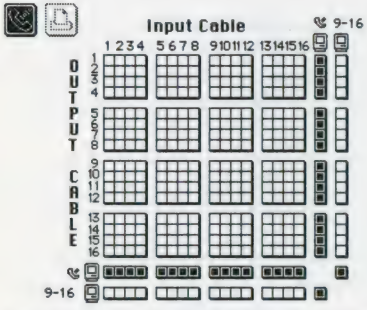


Figure 12.17: Cable Routing for Figure 12.16

When you network MIDI Time Pieces, you must set the first one to 1-8 mode, and the second one to 9-16 mode. You don't have to enter a device for each of the MIDI Time Piece ports (like in this example); only for the ports to which you have connected devices.

Two MIDI Time Pieces Networked With Three Cables

If your MIDI Time Piece DA's network configuration looks like the left half of Figure 12.18, then the MTP interface appears in your Studio Setup document as shown in the right half.

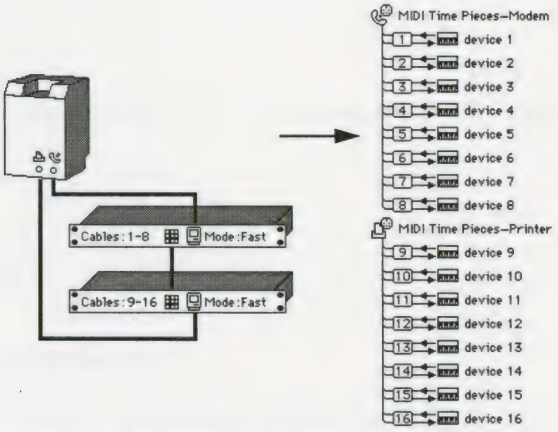


Figure 12.18: Two MTP's and Three Cables

You should set your cable routing to look as shown in Figure 12.19:

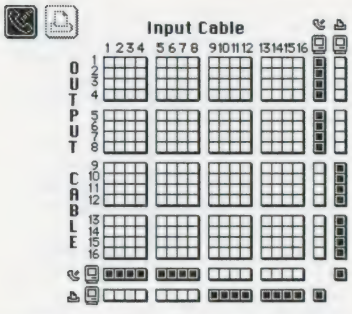


Figure 12.19: Cable Routing for Figure 12.18

In this configuration, it is possible to access MIDI Time Piece MIDI ports 1 through 16 from either Macintosh port. It is important that you don't define multiple devices as occupying the same port in your Studio Setup document.

You can see from the Studio Setup document shown in Figure 12.18 that you can connect up to eight devices to each MIDI Time Piece.

You don't have to enter a device for each of the MIDI Time Piece ports (like in this example); only for the ports to which you have connected devices.

CHAPTER 13: OMS Setup Menus

Apple Menu

About OMS Setup...

This command opens a window that identifies the program, the version number and the authors.

File Menu

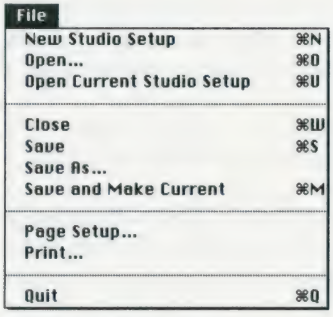


Figure 13.1: File Menu

New Studio Setup

Choose this command to open a new, untitled Studio Setup document. When you choose **New Studio Setup**, you'll first be asked whether you want to create a Minimal or Custom Studio Setup document (see "Configuring OMS" on page 29). If you choose the Custom Studio Setup option, you'll be prompted to select the serial port(s) on which you wish to search for MIDI interfaces. The new Studio Setup document will contain icons representing any MIDI interfaces or NuBus cards attached to the Macintosh.

If you always want to create Custom Studio Setups and don't want on-line help when you create new Studio Setup documents, disable the **Help During New Studio Setup** option in the **Help** menu.

If you hold down the command, option, and shift keys when you choose the **New Studio Setup** command, you'll be able to add interfaces to your Studio Setup document manually. Keep holding down the command, option, and shift keys as you respond to each driver inquiry.

IMPORTANT: Choosing the **New Studio Setup** command will make any current Studio Setup document no longer current.

Open...

Choose this command to open an existing Studio Setup document. When you choose **Open**, you'll see a standard Macintosh open dialog box giving you access to the Studio Setup documents on any available drive.

Open Current Studio Setup

Choose this command to automatically open the Studio Setup document that was most recently made current. If a Studio Setup document was never created and made current, this command will be grayed out and inaccessible.

Close

Choose this command to close the currently selected Studio Setup document. It will close immediately if you didn't make any changes since you last saved the document. If you made changes, you'll be prompted to save them.

Choosing the **Close** command is the same as clicking a window's Close box.

Save

Choose this command to save the currently selected Studio Setup document to disk. If the document does not have a file name, you will get a standard Macintosh Save As dialog box.

The **Save** command is disabled if you have not changed a file; this prevents unnecessary saving.

Save As...

This command performs the same operation as **Save** except that it opens the standard Macintosh Save As dialog box, enabling you to rename the document.

Save and Make Current

Choose this command to save the currently selected Studio Setup document to disk and make it the current Studio Setup document. If the document does not have a file name, **Save and Make Current** asks you to name the file.

If you open a Studio Setup document and make no changes to it, this command becomes the **Make Current** command.

The current Studio Setup document is the one from which OMS applications (such as Vision and Galaxy) gain their knowledge of your MIDI studio. The instruments contained within this current document will be the ones that appear in OMS applications. See Chapter 6: Saving a Studio Setup and Making it Current for more information.

Page Setup...

Choose this command to open the standard printing options dialog box. Within that dialog, you can select options such as paper size, document reduction, and various other printer functions. The default values are generally acceptable for printing.

Print...

Choose this command to print the currently selected Studio Setup document.

Quit

Choose this command to close all windows and quit the OMS Setup application. If you have any unsaved documents, they will be brought to the front, and you will be asked if you want to save the changes.

Edit Menu

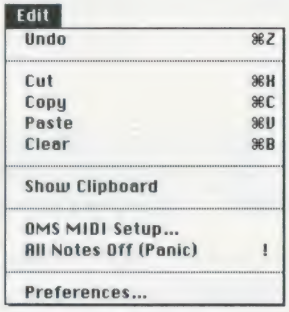


Figure 13.2: Edit Menu

Undo

Choose this command to undo your most recent Edit menu action. The word "Undo" is usually followed by the name of the reversible action (such as "Undo Cut Device"). The **Undo** command allows you to examine the results of an action without committing to it.

If you choose to undo an action, the **Undo** command becomes a **Redo** command. Choose the **Redo** command to make the document appear as it did before you chose **Undo**. Use the **Undo** and **Redo** commands to toggle between the before and after versions of your most recent action.

Cut

This command copies the selected items in the currently active window to the Clipboard and then removes them from the window. Choosing **Cut** is the same as choosing **Copy** followed by **Clear**.

Copy

Choose this command to copy the selected items in the currently active window the Clipboard. The window remains unchanged.

Paste

Choose this command to paste the contents of the Clipboard to the currently active window.

You can copy MIDI devices or patchbays and paste them between Studio Setup documents. A pasted device is connected to whatever device is selected in the Studio Setup document. If no device is selected, then it's pasted (unconnected) to the top of the Studio Setup document. You can not copy and paste interface icons.

Clear

This command clears the selected items from the currently active window, but does not affect the Clipboard. Typing the Delete or Backspace key is the same as choosing **Clear**.

Show Clipboard

This command opens a window showing the contents of the Clipboard. You cannot select items in the Clipboard window.

OMS MIDI Setup...

This command opens the OMS MIDI Setup dialog box. Use this dialog box to tell OMS which Macintosh serial ports to use for MIDI, and how OMS should behave in the presence of other Macintosh applications. You can disable OMS drivers for serial port devices (such as MIDI Interfaces) by using this dialog box to uncheck the Modem and/or Printer ports.

Figure 13.3: OMS MIDI Setup Dialog

The Use Serial Ports Check Boxes

The **Use Serial Ports** check boxes tell OMS which serial ports to use for MIDI. When "Allow Non-OMS Applications" mode is selected, OMS releases the serial ports when the active application is not an OMS application. You only need to uncheck a port when...

- You need the serial ports for something other than MIDI (for example, printing) and an OMS application is running, or
- OMS is in "Only OMS Applications" or "Use Apple MIDI Manager" modes and you have a non-OMS application running (for example, a communication program) which needs a serial port.

The Compatibility Radio Buttons

OMS has three different compatibility modes. These modes are:

- Use Apple MIDI Manager

  When this is the selected mode, OMS applications also use the Apple MIDI Manager. See Chapter 11: Using OMS with MIDI Manager for detailed information about using OMS with MIDI Manager. When you launch a MIDI Manager application, OMS will automatically put OMS in this mode if the OMS MIDI Manager driver is in your System folder. This option is disabled if MIDI Manager isn't installed.

- Only OMS Applications

  When this is the selected mode, OMS applications can continue to send and receive MIDI even if they're not active. When OMS is in this mode, it will not give up control of the serial ports when another non-OMS application is running.

- Allow Non-OMS Applications

  When this is the selected mode, OMS applications release control of the serial ports when a non-OMS application becomes active. Unlike when "Only OMS Applications" is selected, OMS applications will not be able to send and receive MIDI data while a non-OMS application is active.

The Errors Button

The **Errors** button opens the Serial Port Errors window.

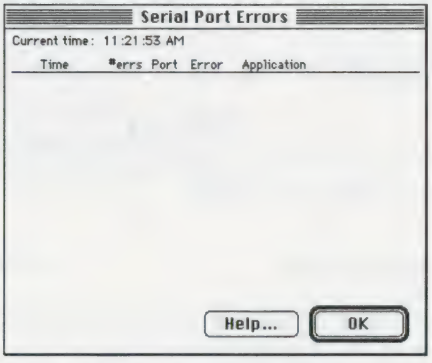


Figure 13.4: Serial Port Errors Window

This window lists recent serial port errors, the time at which they occurred, the number of repeated occurrences, the port, the type of error and the active application at the time of the error.

Click the **Help** button for detailed information about serial port and framing errors.

When you click the **OK** button and haven't changed anything in the OMS MIDI Setup window, both the Serial Port Errors window and the OMS MIDI Setup window close.

All Notes Off (Panic)

This command sends note off commands to all MIDI channels. **Use All Notes Off (Panic)** to silence stuck notes. It generally takes two or more seconds to complete the task (longer if you have a multi-port interface such as the Studio 4, Studio 5, or MIDI Time Piece).

Preferences...

This command opens the Preferences dialog box. Use this dialog box to configure various aspects of OMS.

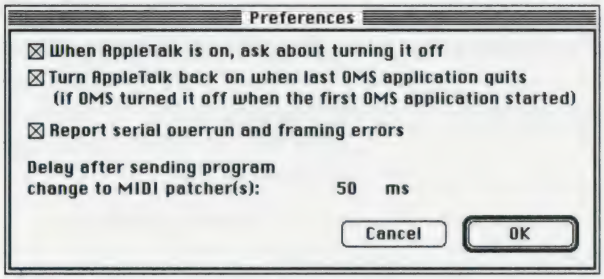

Preferences
When AppleTalk is on, ask about turning it off
Turn AppleTalk back on when last OMS application quits
(if OMS turned it off when the first OMS application started)
Report serial overrun and framing errors
Delay after sending program
change to MIDI patcher(s):
50
ms
Cancel
OK

Figure 13.5: OMS Setup Preferences Dialog

The AppleTalk Check Boxes

If you check "When AppleTalk is on, ask about turning it off", you will be alerted if you use an OMS application and AppleTalk is on.

If you check "Turn Appletalk back on...", then OMS turns AppleTalk back on when the last OMS application quits (if OMS turned it off in the first place).

When AppleTalk is active, it impairs MIDI communication (particularly patch transfers). Opcode recommends that you do not use AppleTalk when using any MIDI applications.

The Report Serial Overrun and Framing Errors Check Box

Check this check box if you want an alert to appear when serial overrun and framing errors occur. Chapter 14: Troubleshooting discusses some possible reasons for serial overrun and framing errors.

Patcher Delay

You can choose how many milliseconds you want to delay the transfer of MIDI data after sending a program change to a MIDI patcher. This is necessary because MIDI patchers take a small amount of time to rearrange their internal connections after receiving a program change message. OMS needs to wait before transmitting so that MIDI data following a program change is properly routed and transmitted through a patcher. If you are using a MIDI patcher and things don't seem to be working properly, try increasing the delay time. A good starting place is 50 milliseconds.

❑ Studio Menu

Figure 13.6: Studio Menu

New Device...

This command opens a dialog box that you use to define a new MIDI device in your Studio Setup document. MIDI devices may be any MIDI synthesizer, drum machines, effect processor, and so on. Choose the device's manufacturer and name from the pop-up menu (or choose "Other" and type the name). Fill in

the rest of the information as described in Chapter 8: Defining MIDI Devices and Patchbays of this manual or as discussed in the MIDI Device Info section in this chapter.

New Patcher...

This command opens a dialog box that lets you define a single MIDI patchbay in your studio. Choose the device name and manufacturer from the pop-up menus or choose "Other" and type the name. Fill in the rest of the information as described in Chapter 8: Defining MIDI Devices and Patchbays of this manual or as discussed in the MIDI Device Info section in this chapter.

MIDI Device Info...

This command reopens the Define Device dialog for the currently selected device (or patcher) in the Studio Setup. Use this command if you need to edit a device or patcher definition. This performs the same function as double-clicking the device icon in the Studio Setup document.

The following information applies to both MIDI device and MIDI patcher editing:

Manufacturer and Model (Devices and Patchers)

Choose the MIDI device manufacturer from the pop-up **Manufacturer** menu by clicking within the field, dragging to the desired manufacturer, and releasing the mouse.

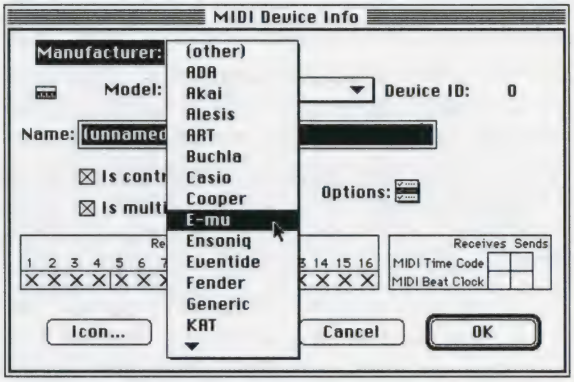


Figure 13.7: Choosing a MIDI Device's Manufacturer

Choose the model name or number from the pop-up **Model** menu as shown in Figure 13.8.

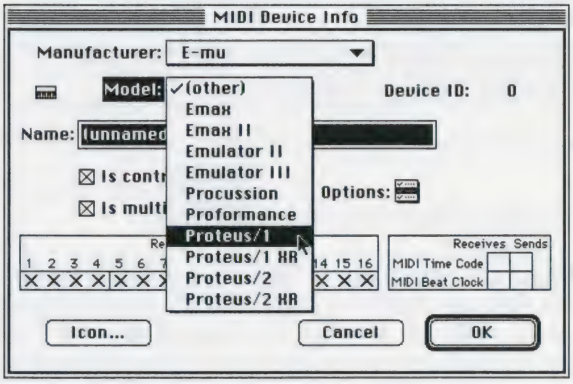


Figure 13.8: Choosing a MIDI Device's Model

Selecting from the Model menu assigns a default icon for the device and sets the "Is controller", and "Is multitimbral" check boxes to their correct default conditions.

Name Field (Devices and Patchers)

There are many different reasons to use the **Name** field:

- If your MIDI device or patcher isn't represented in the **Manufacturer** or **Model** menus, select "Other" (the default selection) in one of the pop-up menu's and type the name of the device in the **Name** field.
- If your device is listed in the **Model** menu but you'd like to call it by a different name, simply select the device from the pop-up menu, then type in a new name in the **Name** field. You should keep the name under 10 characters so that it's fully visible in Vision.
- If you have multiple identical devices, you must give them different names. OMS Setup does not allow identical names in your Studio Setup document, although it does allow multiple identical devices. These identical devices should have unique device IDs if possible.

Controller Check Box (Devices Only)

Check the "Is controller" check box if the device is a MIDI controller; that is, it send MIDI data other than system exclusive and sync.

Examples of controllers are: MIDI keyboards, guitars, wind controllers and most drum machines with pads.

Examples of non-controllers are: tone generators and effects units.

Multitimbral Check Box (Devices Only)

Check the "Is multitimbral" check box if the device can respond to MIDI on more than one channel at a time. Newer synthesizers can play several separate voices on different MIDI channels simultaneously. These instruments are called multitimbral. If you check the "Is multitimbral" check box, you will be able to specify multiple receive channels for the device. If you indicate that the device is not multitimbral, you will only be able to select one receive channel.

Receive Channels (Devices and Patchers)

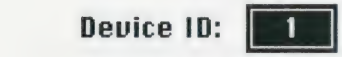
For a MIDI device, this is the channel(s) on which it responds to incoming MIDI data. Multitimbral devices respond to MIDI on more than one channel, non-multitimbral devices respond to MIDI on only one channel. Specify the receive channel(s) by placing an **X** under the correct channel number(s). Some

applications send MIDI to the device only on the channels you enter here, so you may wish to check all 16 channels for your multitimbral device.

For a MIDI patcher, this is the channel on which it responds to MIDI program change messages. OMS sends patcher program changes when an application such as Galaxy needs to communicate patch information with a device or when you click devices in OMS Setup's Test Studio mode. Consult your MIDI patchbay manual to find out how to set it to respond to MIDI program change messages. Some patchbays only respond to program change messages on one of their input ports—if this is true for your patcher, make sure the Macintosh is connected to that MIDI port.

Device ID (Devices Only)

Many devices use a Device ID that identifies it for system exclusive MIDI messages. In the same way that note information is communicated on a specific MIDI channel, system exclusive messages (generally patch information) contain a device ID specifying the device to which the data is directed. On some devices (usually older ones), the "basic" MIDI channel also functions as the device ID. Instead of "device ID," some manufacturers use the terms "MIDI ID," "unit ID," "unit number," "global channel" "device number," or "system exclusive ID...." The Device ID is used by librarian and editing software, such as Galaxy, to identify the device with which it communicates.



For devices that you specify as not multitimbral, OMS Setup sets the default Device ID to be the same as the single MIDI receive channel. You can change the Device ID if you need to.

IMPORTANT: You must set the Device ID to the correct value for librarian programs to perform properly.

Sends MIDI Time Code Check Box (Devices Only)

Check this box if a MIDI device is capable of transmitting MIDI Time Code (MTC) and you intend to slave another device or Macintosh application to that timecode. SMPTE synchronizers and FSK-to-MIDI converters are examples of devices that transmit MTC.

Receives MIDI Time Code Check Box (Devices Only)

Check this box if a MIDI device is capable of receiving MIDI Time Code (MTC) and you intend to slave that device to external MTC. SMPTE generators and MIDI-to-FSK converters are examples of devices that receive MTC.

Sends MIDI Beat Clock Check Box (Devices Only)

Check this box if a MIDI device sends MIDI Beat Clock and you intend to slave another device or Macintosh application to that Beat Clock. Examples of devices that send MIDI Beat Clock are hardware sequencers, synthesizers with their own internal sequencers, and drum machines.

Receives MIDI Beat Clock Check Box (Devices Only)

Check this box if a MIDI device receives MIDI Beat Clock and you intend to slave the device to external MIDI Beat Clock. Examples of devices that receive MIDI Beat Clock are hardware sequencers, synthesizers with their own internal sequencers, and drum machines.

Options Pop-up Menu (Devices Only)

Choose "Uses MIDI Machine Control" from the pop-up Options menu if your MIDI device uses MIDI Machine Control and you intend to sync with MIDI Machine Control. A check mark is placed to the left of the option when it's enabled. Choose the option again to disable (uncheck) it. MIDI Machine Control (MMC) is a standard set of System Exclusive messages used to control tape decks, timecode generators and other devices from a variety of manufacturers.

Choose "Uses ARTInet" from the pop-up Options menu if your MIDI device uses ARTInet and you intend to sync with ARTInet. A check mark is placed to the left of the option when it's enabled. Choose the option again to disable (uncheck) it. ARTInet is a set of commands used to control tape decks, timecode generators and other devices.

Icon Button (Devices and Patchers)

Click this button to open a dialog box of icon choices for the device or patcher defined in the MIDI Device Info dialog box.

Figure 13.9: Device Icons

Choose an icon by clicking it. You may choose any icon that you like, but it's recommended that the icon have some relationship to the function of the instrument. If it's a controller keyboard, then choose the keyboard type icon; if it's a sound module, then choose a rack module icon. Your choice determines the device icon in the Studio Setup document.

Ports (Patchers Only)

This numerical represents the number of pairs of MIDI ins and outs on your MIDI patcher. If there are more outs that ins (or vice versa), enter the larger number in the Ports field.

Send Program Changes To (Patchers Only)

This is a special feature that appears only if you define two or more patchers, or if you have one patcher connected to both Macintosh ports in your MIDI studio. This menu will not appear if there is only one patcher in the document.

Most MIDI patchbays receive program changes only on one of their MIDI in ports. The **Send Program Changes to** pop-up menu allows you to specify which Macintosh port, and consequently which patchbay port, receives the program change.

This is easiest to explain by example. Suppose you have the Studio Setup document shown in Figure 13.10. It represents a single MSB 16/20 MIDI patchbay shared between two serial ports. "MSB 16/20 Modem" and "MSB 16/20 Printer" represent one patchbay operating on two serial ports (see "Sharing a Patcher Between Two Ports" on page 84.

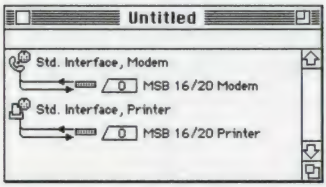


Figure 13.10: One Patcher Defined as Two

Since there are two patcher icons, each patchbay icon's MIDI Device Info dialog contains a **Send program changes to** pop-up menu.

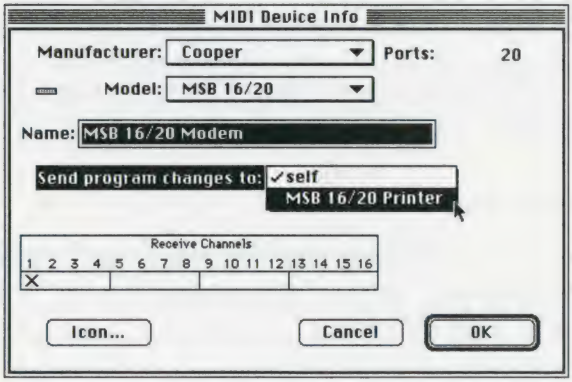


Figure 13.11: Send Program Changes to Pop-up Menu

In this example, the **Send program changes to** pop-up menu allows you to choose whether program changes are sent to the MSB 16/20 via the Modem port or the Printer port. Choosing "self" in Figure 13.11 tells OMS to send program changes to the MSB MIDI port that's connected to the Modem port. Choosing "MSB 16/20 Printer" tells OMS to send program changes to the MSB MIDI port that's connected to the Printer port.

Device Icon...

This command opens a dialog box from which you choose an icon for the currently selected device in the Studio Setup document. This is the same as option double-clicking the interface icon in the Studio Setup document.

Interfaces...

Choose this command to update your Studio Setup document if you change the hardware connected directly to your Macintosh (MIDI interfaces, NuBus cards). A dialog opens asking if you want to update your Studio Setup document. Click the **Update Setup** button, select the port(s) to search, and click the **Search** button. The Macintosh searches its internal card slots and the selected serial ports for hardware. Any new cards or interfaces are added to your Studio Setup document. Cards or interfaces that are no longer connected disappear and the devices connected to those interfaces become unconnected.

If you hold down the command, option, and shift keys when you choose the Interfaces command, you'll be able to add interfaces to your Studio Setup document manually. Keep holding down the command, option, and shift keys as you respond to each driver inquiry.

Test Studio

Use this menu item to toggle the OMS Setup test mode on and off. If **Test Studio** is checked, then OMS Setup is in test mode. If **Test Studio** is not checked, OMS Setup is not in test mode.

When OMS Setup is in test mode, you can test the accuracy of device definitions in the current Studio Setup document and determine if MIDI is getting to and coming from your MIDI devices.

See Chapter 10: Testing your Studio Setup Document for details on test mode.

Sort by Port/Name

Choose this command to rearrange the devices and patchers in your Studio Setup document numerically according to their port number and alphabetically according to their name.

❑ Driver Menus

Some OMS drivers (such as the Studio 3, Studio 4, and Studio 5) add their own menus to the menu bar. See those owner's manuals for details about their menus. If you use more than three OMS drivers that add menus, the individual device menus will be replaced by a hierarchical menu named "Drivers".

On-Line Help

System 6 Users

On line help is available from the **Help** menu. Choose **About OMS Setup Help** to open a dialog describing on-line help techniques. Enable **Help During New Studio Setup** if you want help windows displayed during each step of a new Studio Setup creation. Choose **Studio Setup Editing** for basic information about editing Studio Setup documents.

NOTE: The **Help During New Studio Setup** option must be enabled if you want to see the Configuring OMS dialog (as discussed in "Launching the OMS Setup Application" on page 27) and choose the Minimal Studio Setup option.

System 7 Users

On line help is available from the Help menu (the little balloon with the question mark). OMS supports balloon help with System 7 and also contains the same help options discussed above.

NOTE: The **Help During New Studio Setup** option must be enabled if you want to see the Configuring OMS dialog (as discussed in "Launching the OMS Setup Application" on page 27) and choose the Minimal Studio Setup option.

CHAPTER 14: Troubleshooting

❑ Tips

Don't Use AppleTalk with OMS

The Macintosh may crash or act sluggishly if AppleTalk is active. Open the Chooser and turn off AppleTalk if you're using any MIDI applications.

Don't Turn MIDI Manager Off From a Non-OMS Application

If you turn MIDI Manager off from within a non-OMS application while OMS applications are active, you may have subsequent interface communication problems with OMS. If this happens, open the OMS MIDI Setup dialog and simply click **OK**.

Use INIT and CDEV Management Software

If your MIDI applications seem to be functioning improperly, or you're experiencing system errors, check the contents of your System Folder. System extensions (also known as INITs in System 6) and Control Panel Devices (CDEV's) are common sources of incompatibility. Remove from the System Folder any extensions and CDEV's that you don't need. There are numerous third-party utilities that allow you to select the extensions and their loading order when you start the computer.

Using a Generic Studio Setup Document

If your studio sees new clients and new equipment every few hours, you may want to use a generic Studio Setup document. Instead of trying to always define every device in the studio, simply make a generic Studio Setup document with devices named "Modem 1" or "Printer 10". This type of Studio Setup document may be easier to use in a product-dynamic studio environment.

Writing Patch Talk Modules in Galaxy

As soon as you've created a custom device type in Galaxy, you should open OMS Setup, select the device that works with the custom Galaxy module, and choose **MIDI Device Info** from the **Studio** menu. You'll notice that the Manufacturer and Model pop-up menus now include the custom device you just created. Select the manufacturer and model from the pop-up menus. Your custom PatchTalk module will now work properly with your device.

Avoid Electromagnetic Fields

Electromagnetic fields are a common cause of file corruption. Disks are magnetic media, and their files, documents, and applications are subject to damage by electromagnetic fields. Never put disks near magnets (such as telephones or speakers).

❑ Problems and Solutions

Serial Overrun and Framing Errors

Serial overrun errors indicate that MIDI data coming into the Macintosh is being lost. This can cause sync problems, stuck notes and unsuccessful patch transfers. Some causes of overrun errors and their solutions include:

- AppleTalk: if it's on, turn it off.
- MIDI Manager and NuBus digital audio operations both use a lot of processing time. Opcode recommends not using MIDI Manager unless you need its features.
- Wherever possible, prevent your MIDI controllers from sending MIDI clock or sync information when it's not needed.

- High-speed interfaces (like the Studio 4, Studio 5, and MIDI Time Piece) may need a slower interface->Macintosh communication speed.
- If you have a Studio 4 or Studio 5, use Vision's Enable Input Devices dialog and Galaxy's Controllers dialog to limit the number of MIDI devices routed to the Macintosh.
- Programming debuggers cause overrun errors if they are actually used (not just installed) while MIDI is coming into your computer.

Framing errors are most often caused by speed mismatches (for example, choosing 1MHz when an interface is in Fast mode).

MIDI Transmission Errors

A common reason for receiving a MIDI Transmission Error alert is that the interface is no longer connected to the Macintosh serial port. It may also indicate that a switch on the front panel of your interface is incorrectly set. Check your MIDI/Thru switches and make sure that they are in the MIDI position, and check the cables connecting the interface to the Macintosh. After you check these things, click **Reset Port** to try to communicate over that port once again or **Forget Port** if you intentionally disconnected your interface.

No MIDI Communication

If you are having a problem communicating with a particular device, try to isolate the device and communicate directly to it. Do this by connecting the device's MIDI in and MIDI out to your interface (bypassing any patchers), creating a Studio Setup document that shows this arrangement, and trying again. This is especially helpful if you are having problems with patch transfers.

Not enough memory to load OMS

If you use System 6 without MultiFinder and don't have enough memory to load OMS, you have the following options:

- Use MultiFinder or System 7.
- Run OMS Setup then quit. This allows OMS to fine-tune its memory allocation.
- Try to make more System heap space by removing any unnecessary INITs or by using a System heap utility.

MIDI Time Piece DA won't work with MIDI Manager or OMS

You must use MIDI Time Piece DA version 1.2 or later and MTP MIDI Manager Driver 1.0 or later.

Performer crashes when launched

Performer 3.62 crashes if you have the OMS MIDI Manager driver in your System Folder, but have not installed the MIDI Manager.

If you never use MIDI Manager, remove the OMS MIDI Manager driver from your System Folder. Performer will no longer crash upon launching.

If you want to use MIDI Manager, install it. Performer will no longer crash upon launching.

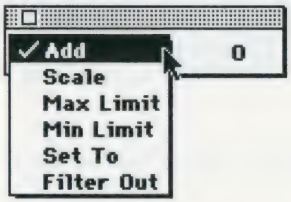
APPENDIX A: Working with Opcode Applications

Often, in this manual, you'll see references to "numericals" and "pop-up menus". The diagram below shows a typical editing window containing both a pop-up menu and a numerical.

❑ Pop-up Menus

You can usually tell a pop-up menu in an Opcode application by the downward-pointing triangle. Clicking anywhere within the field opens a pop-up menu from which you can select an appropriate choice.

1. **Click the mouse on the pop-up menu and hold down the mouse button.**
   A pop-up menu appears.
2. **Move the mouse (with the button still down) over the item you wish to select, then release the mouse button.**
   The field changes to show your new selection.



❑ Numericals

Numericals are values that you can edit on the Macintosh screen. You can usually identify numericals by their bold type. Opcode programs give you numerous ways to edit the value of a numerical.

Method 1

1. **Position the cursor either just above or just below an imaginary center line running through the numerical.**

   The cursor will turn into either an upward or downward pointing arrow depending on its position relative to the center line.

2. **To increment a numerical value, position the cursor in the top half of the numerical and click the mouse.**

   When the cursor is an up arrow, single mouse clicks increment the numerical value. Click and hold the mouse to increase the numerical value rapidly.

3. **To decrement a numerical value, position the cursor in the bottom half of the numerical and click the mouse.**

   When the cursor is a down arrow, single mouse clicks decrement the numerical value. Click and hold the mouse to decrease the numerical value rapidly.

Method 2

Use the mouse as a "slider". To change a numerical in this way, click it and while holding the mouse button, drag the mouse in a vertical direction. Pushing the mouse away from you increases values. Pulling it toward you decreases values. The cursor will disappear while the value is changing and reappear when you release the mouse button.

Method 3

Some numericals allow you to simply type in a value. First, click the numerical, then type a number and press the Enter or Return keys. The numerical changes to reflect the new value. You will not be allowed to enter invalid values.

APPENDIX B: Glossary

Apple MIDI Driver: Apple's standard interface driver for MIDI Manager. It's functions are duplicated and exceeded by the OMS MIDI Manager driver, so you should removed it from the System Folder.

AppleTalk: A Macintosh communication protocol for local area networks (LANs). You should always turn off AppleTalk when using MIDI applications.

ARTInet: A set of commands used to control multiple tape decks, timecode generators, and other devices while maintaining synchronization between them. ARTInet messages can be sent over an RS-422 serial link, or enclosed in MIDI System Exclusive messages. Opcode's Studio A/V uses ARTInet.

Controller: A MIDI device that transmits MIDI note information. MIDI keyboard instruments, MIDI wind controllers, MIDI guitars, and MIDI drum pads are all examples of controllers. Rack mount sound modules and effects devices are usually not MIDI controllers.

Current Studio Setup Document: The Studio Setup document that is currently being referenced by OMS-compatible applications. You can have many Studio Setup documents, but only one can be the current document.

Custom Studio Setup: An OMS option that allows you to define Studio Setup documents that accurately mirror the connection of devices in your MIDI studio.

Device: See "MIDI Device".

Device ID: An identification number used by a MIDI device to distinguish it from other identical MIDI devices for system exclusive communications.

Driver: See "OMS Driver".

Interface: See "MIDI Interface".

MacProteus: This is a re-designed E-mu Proteus/1 synthesizer made by Digidesign that installs in a Macintosh NuBus slot.

MIDI Beat Clock: The original MIDI synchronization format (and the format used by most synthesizer-integrated sequencers). This format synchronizes MIDI playback to actual beats (24 beats/quarter note). Therefore MIDI Beat Clock speed changes as tempo changes. This format is often used for synchronizing playback of one or more MIDI-based devices.

MIDI Device: Any device (stand-alone or NuBus card) that communicates MIDI information.

MIDI Interface: A device that connects between the Macintosh serial port(s) and MIDI devices in your studio. It allows Macintosh MIDI software to communicate with your MIDI devices.

MIDI Machine Control: A standard set of System Exclusive messages used to control tape decks, timecode generators and other devices from a variety of manufacturers.

MIDI Manager: A Macintosh system extension developed by Apple. It provides a driver for a standard MIDI interface and a framework for other third-party drivers. It allows multiple MIDI applications to run simultaneously and share Macintosh serial ports and timing capabilities. It is often slow and sometimes causes MIDI timing problems.

MIDI Merging: Controlling one MIDI channel with two or more different MIDI sources.

MIDI Patchbay: A device that allows you to control and change the routing of MIDI data between MIDI devices without re-routing cables every time your MIDI communication needs change. This is similar in concept to an audio patchbay.

MIDI Time Code: A standard format for sending SMPTE timecode information (i.e. hours, minutes, seconds and frames) over a MIDI cable. MTC is

useful for synchronizing a computer sequencer to a tape recorded with SMPTE timecode.

MIDI Time Piece: A networkable, fast-mode multi-port MIDI interface and SMPTE generator/synchronizer made by Mark of the Unicorn.

Minimal Studio Setup: This is a simple Studio Setup document containing standard interfaces connected to generic 16-channel multitimbral MIDI devices. Minimal Studio Setup is useful for studios with constantly changing studio setups, or for people who wish to continue using Macintosh MIDI software the "old-fashioned" way. The minimal Studio Setup document does not work with Opcode's Galaxy program.

Multitimbral: A multitimbral device can receive on more than one MIDI channel and play different sounds on each of the different channels. Most modern synthesizers are multitimbral. Many early-MIDI synthesizers are not.

NuBus Card: An expansion card that uses the Macintosh NuBus address and data busses. NuBus cards include synthesizers (MacProteus), samplers (SampleCell), video display drivers, system accelerators, and many others.

Numericals: Values that you can edit on the Macintosh screen. You can identify numericals by their bold type. Opcode programs give you numerous ways to edit the value of a numerical (see Appendix A).

OMS: A Macintosh system extension that controls and defines the various elements of a MIDI studio. OMS performs MIDI driver functions and provides a central location for storing a detailed description of your MIDI studio. It gives you access to hundreds of MIDI channels, and can operate with or without MIDI Manager.

OMS Driver: Allow OMS to work with a variety of products that connect directly to the Macintosh (such as MIDI interfaces and NuBus cards).

OMS Setup: The application used to interface with OMS and to design Studio Setup documents.

Patchbay: See "MIDI Patchbay".

PatchBay Application: An Apple application used to configure various MIDI devices when using Apple's MIDI Manager.

Patcher: See "MIDI Patchbay".

SampleCell: A MIDI digital sample playback NuBus card made by Digidesign.

Serial Overrun: An error caused when too much MIDI data comes into the Macintosh. Serial overruns can cause sync problems, stuck notes, and unsuccessful patch transfers.

Studio Setup Document: A graphic representation of all the MIDI devices in your studio and the connections between them. All OMS-compatible applications derive their knowledge of your studio from this document.

Studio 3: A standard MIDI interface and timecode generator/synchronizer made by Opcode.

Studio 4: A networkable, fast-mode multi-port MIDI interface and SMPTE timecode generator/synchronizer made by Opcode. A single Studio 4 supports 128 MIDI channels. Four networked Studio 4's support 512 MIDI channels.

Studio 5: A networkable, fast-mode multi-port MIDI interface and SMPTE timecode generator/synchronizer with built in 68000 microprocessor made by Opcode. A single Studio 5 supports 240 separate MIDI channels. Six networked Studio 5's support 1440 MIDI channels.

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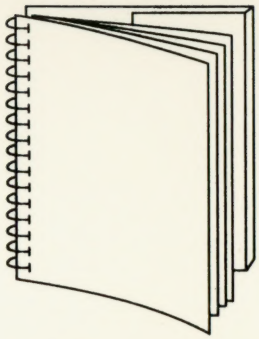

Tuck end flap inside back cover when using manual.

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